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ABSTRACT

The following papers are included: "Research and Teaching from the Web/Multimedia" (Swan); "Vocational Teachers' Attitude toward, Knowledge of, and Use of National Skill Standards" (Belcher, McCaslin); "Predicting the Leadership Effectiveness of Vocational Education Administrators" (Daughtry, Finch); "Coping Behaviors and Transitions of Managerial Males Who Experience Mid-Life Job Loss" (Doster, Kirby); "Assessment of Junior High/Middle School Agricultural Education Programs in Nebraska" (Fritz, Moody); "Vocational Teacher Preparation in North Carolina for Integration of Academic and Vocational Education" (Hartzell, Flowers, Jewell); "Developing Career and Academic Aspirations in School-to-Work Programs" (Hernandez-Gantes, Nieri) "Producing Knowledge in Career-Oriented Programs" (Hernandez-Gantes, Sanchez); "Turnover of Baccalaureate Nurse Educators in Louisiana" (Holland, Burnett); "Comparison of the Perceptions of Secondary Business and Office Education Instructors and Agricultural Education Instructors of the North Carolina Vocational Competency Achievement Tracking System (VoCATS)" (Jewell, Jewell); "Relationship between NOCTI (National Occupational Competency Testing Institute) Written and Performance Exams" (Kapes, Martinez); "Impact of Block Scheduling on Instruction, FFA (Future Farmers of American and SAE (Supervised Agricultural Experience) in Agricultural Education" (Moore, Becton, Kirby); "Employer Involvement in Georgia Youth Apprenticeship Programs" (Smith); "Benchmarking Youth Apprenticeship Programs in Georgia" (Smith); "Student Perceptions toward Effectiveness of Distance Education" (Swan, Jackman); "Using an Agricultural

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Model to Establish Core Occupational Competencies for Secondary Vocational Programs" (Waidelich, Hillison); "Analysis of Student Programmatic Delays in Postsecondary Flight Training Programs: A National Study" (Bryan, Thuemmel); "Impact of Skill Standards on Vocational Education: Perceptions of Technical Committees" (Bunn, Steward); "Grounded Theory Approach to Identifying the Essential Attributes of Quality Education-to-Work Curriculum" (Ellibee); "Perceived Educational Needs of Women Entrepreneurs in a Business Incubator Setting" (Heath, Schmidt); "Influence of Expert Status and Learning Style Preference on Critical Thinking Abilities of Professional Nurses" (Prestholdt, Burnett); "Academic Success of GED (General Educational Development) and High School Graduates in the Secretarial Diploma Programs at Augusta Technical Institute" (Willis, Stitt-Gohdes); and "New American High School" (Stern, Hallinan and Faulkner). (MN)

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AVERA

American Vocational Education Research Association

1996

PROCEEDINGS

American Vocational Educational Association

1996 Annual Convention
Cincinnati, Ohio

December 5-8, 1996

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AVERA

American Vocational Education Research Association

PROCEEDINGS

American Vocational Educational Association

1996 Annual Convention
Cincinnati, Ohio

December 5-8, 1996

Donna H. Redmann
AVERA President Elect/Program Chair and Proceedings Editor
Louisiana State University

NOTES FROM PROGRAM CHAIR

The 1996 American Vocational Education Research Association (AVERA) Annual Meeting was held December 5-8, 1996, in Cincinnati, Ohio as part of the American Vocational Association (AVA) Convention. The overall theme for the AVA Convention was "Partnership for Success" and the sub-themes were partnerships between business and education, partnerships between education and policymakers, partnerships between secondary and postsecondary, partnerships between core academic and technical education, and leadership.

AVERA is the research section of New and Related Services Division of AVA. The research section had eleven sessions: five research paper presentation sessions, two doctoral studies sessions, one section at the Grand Carousel, the JVER writing/reviewing session, the past-president open forum, and a business meeting. A copy of the program agenda is provided on page v. The 32 papers presented at the conference were selected through a blind, peer refereed process. There were a total of 34 reviewers, with each proposal being read by three reviewers. The 22 papers contained herein are from authors who wished to have their papers published in the Proceedings. The AVERA President's Address is also included.

Thanks and appreciation is expressed to the following groups and individuals who helped to make the AVERA program a success: the individuals who submitted proposals for review; the 34 reviewers who were given a very short turn around time to review the proposals; the session chairs and facilitators; the AVERA Executive Board; and the current AVERA President Mike Swan and the Past-President David Pucel for their guidance and support. A very special thanks is given to Sandra Cash, secretary in the LSU School of Vocational Education, for compiling the proceedings and to my peers at LSU for their support.

Donna H. Redmann

Donna H. Redmann,
AVERA President-Elect/Program Chair and Proceedings Editor
American Vocational Education Research Association
1996 AVERA/AVA Annual Convention

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New and Related Services -- Research Section Program
1996 AVA Annual Convention
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✸ Wednesday, December 4, 1996 ✸

Journal of Vocational Education Research Editorial Board Meeting 1:30 - 5:00 p.m.
Regal Hotel, Colonnade A

Chair: James A. Gregson, Editorial Board Chair, Oklahoma State University
Facilitator: Jay W. Rojewski, JVER Associate Editor, University of Georgia

✸ Thursday, December 5, 1996 ✸

AVERA Executive Committee Breakfast Meeting **(By Invitation only)** 7:00 - 10:00 a.m.
Regal Hotel, Colonnade A

Chair: Michael K. Swan, AVERA President, North Dakota State University
Facilitator: Donna H. Redmann, AVERA President-Elect, Louisiana State University

Students Perceptions and Perspectives 1:30 - 3:00 p.m.
Convention Center, Room 266

Topic 1: Student Perceptions Toward Effectiveness of Distance Education
Speakers: Michael K. Swan and Diane H. Jackman, North Dakota State University
Topic 2: Producing Authentic Learning in Career-Oriented Programs: A Qualitative Analysis of Students' Perspectives
Speakers: Victor M. Hernandez-Gantes and Dorothy Sanchez, University of Wisconsin
Topic 3: Impact of School-to Work Programs on Career Aspirations: A Qualitative Analysis of Gender Perspectives
Speakers: Victor M. Hernandez-Gantes and Lisa A Nieri, University of Wisconsin
Chair: Alfred J. Mannebach, University of Connecticut
Facilitator: N. L. McCaslin, The Ohio State University

Quality Instruction in Vocational Education 3:30 - 5:00 p.m.
Convention Center, Room 266

Topic 1: Vocational Teachers' Attitudes toward Knowledge and Use of National Skill Standards
Speakers: Greg Belcher and N. L. McCaslin, The Ohio State University, Columbus, OH
Topic 2: Using an Agricultural Model to Establish Core Occupational Competencies for Secondary Vocational Programs
Speakers: Will D. Waidelich, The Ohio State University, Columbus, OH and John Hillison, Virginia Polytechnic Institute and State University, Blacksburg, VA
Topic 3: The Impact of Block Scheduling on Instruction, FFA and SAE in Agricultural Education
Speakers: Gary Moore, Kay Becton, and Barbara M. Kirby, North Carolina State University, Raleigh, NC
Chair: Jim Flowers, North Carolina State University, Raleigh, NC
Facilitator: Ken Martin, University of Cincinnati, Cincinnati, OH

✱ Friday, December 6, 1996 ✱

Doctoral Studies in Vocational Education Session I

10:30 a.m.-12:00 noon
Convention Center, Room 267

Topic 1: Perceptions of National Industry-Based Skill Standard Technical Committee Members of the Impact of Skill Standards on Vocational Education
Speakers: Phyllis C. Bunn, Delta State University, Cleveland, MS, and Daisy L. Stewart, Virginia Polytechnic Institute and State University
Topic 2: A Grounded Theory Approach to Identifying the Essential Attributes of Quality Education-to-Work Curriculum
Speakers: Margaret A. Ellibee, University of Wisconsin
Topic 3: Computer Simulations that Assess Situated Learning
Speakers: Chris Jonick and John W. Schell, University of Georgia
Topic 4: Perceived Educational Needs of Women Entrepreneurs in a Business Incubator Setting
Speakers: William J. Heath, Central Virginia Community College and B. June Schmidt, Virginia Polytechnic Institute and State University
Chair: Jerome T. Kapes, Texas A&M University
Facilitator: Wanda Stitt-Gohdes, University of Georgia

Joint Session--Grand Carousel

1:30 - 5:00 p.m.

Carousel 1: Rethinking Traditional Admission to Teacher Education Programs
Speakers: Diane H. Jackman and Michael K. Swan, North Dakota University
Carousel 2: Leadership in Contextual Curriculum Development: Bridging Research to Practice for Informed Curricular Choices
Speakers: Barbara Dougherty and Margaret A. Ellibee, University of Wisconsin
Carousel 3: Undergraduate Leadership Education Courses and Programs in Departments of Agricultural Education
Speakers: F. William Brown and Susan M. Fritz, University of Nebraska
Carousel 4: Using Career Majors as a Vehicle for Whole School Reform
Speakers: David Stern, Mayo Tsuzuki, and Susan L. Faulkner, National Center for Research in Vocational Education, Berkeley, CA
Carousel 5: Case Study: Preparation for Apprenticeship Program for Women
Speakers: Paula L. Fisher, Electrical Training Trust, Los Angeles, CA, and Leonard Albright, California State University, Long Beach
Carousel 6: Agriscience Connection
Speakers: Geraldine H. Holmes and Joe W. Kotrlik, Louisiana State University
Carousel 7: Predicting the Future--Several Heads are Better than One
Speakers: Barbara G. Ludwig, The Ohio State University
Carousel 8: Role of the Area Career and Technical Education Centers and the Community Colleges for Delivering Career Preparation Programs in Michigan
Speakers: Floyd L. McKinney, Western Michigan University

Doctoral Studies in Vocational Education Session II 1:30 -3:00 p.m.
Convention Center, Room 267

Topic 1: The Influence of Expert Status and Learning Style Preference on Critical Thinking Abilities of Professional Nurses
Speakers: Cynthia O. Prestholdt, Southeastern Louisiana Universit, and Michael F. Burnett, Louisiana State
Topic 2: The Influence of Open-Mindedness and Knowledge on Attitudes Toward Teen Pregnancy and Parenting Among Family and Consumer Science Teachers
Speakers: Peggy C. Rolling, Southeastern Louisiana University and Michael F. Burnett, Louisiana State University
Topic 3: Academic Success of GED Recipients and High School Graduates in the Secretarial Diploma at Augusta Technical Institute
Speakers: Marilyn D. Willis, Augusta Technical Institute, Augusta, GA, and Wanda L. Stitt-Gohdes, University of Georgia
Topic 4: An Analysis of Student Programmatic Delays in Postsecondary Flight Training Programs: A National Study
Speakers: Jon L. Bryan, Bridgewater State University
Chair: Alan G. Robertson, Research Coordinating Unit, New York State Education Department (Ret.)
Facilitator: Wesley Budke, The Ohio State University

Youth Apprenticeship and Work Ethics 3:30 - 5:00 p.m.
Convention Center, Room 267

Topic 1: Employer Involvement in Youth Apprenticeship Programs
Speakers: Clifton L. Smith, University of Georgia
Topic 2: Benchmarking Youth Apprenticeship Programs
Speakers: Clifton L. Smith, University of Georgia
Topic 3: Work Ethic of At-Risk Youth
Speakers: Roger B. Hill and Jay W. Rojewski, University of Georgia
Chair: Thelma C. King, North Carolina A & T State University
Facilitator: Gloria T. Sandoval, The Ohio State University

AVERA Presidential Address and Annual Business Meeting 5:30 - 7:30 p.m
Convention Center, Room 268

Topic 1: Annual Business Meetings
President: Michael K. Swan, North Dakota State University
Topic 2: President Address
Speaker: Michael K. Swan, North Dakota State University
Chair: Donna H. Redmann, Louisiana State University
Facilitator: Davison Mupinga, Louisiana State University

✷ Saturday, December 7, 1996 ✷

Writing/Reviewing for the Journal of Vocational Education Research
10:30 a.m.- 12:00 noon
Convention Center, Room 235

Speakers: Theodore Lewis, Editor (JVER), University of Minnesota
Jay W. Rojewski, Associate Editor (JVER), University of Georgia

***Past President Luncheon* (By Invitation Only)** 12:00 noon - 1:30 p.m.
Convention Center, Room 240

Chair: David J. Pucel, AVERA Past-President, University of Minnesota
Facilitators: Michael K. Swan, AVERA President, North Dakota State University
Donna H. Redmann, AVERA President-Elect, Louisiana State University

Vocational Education--The Next Generation: 1:30 - 3:00 p.m.
Open Forum of Past AVERA Presidents Convention Center, Room 235

Speakers: Past Presidents of the American Vocational Education Research Association (AVERA)
Chair: David J. Pucel, AVERA Past-President, University of Minnesota
Facilitators: Michael K. Swan, AVERA President, North Dakota State University
Donna H. Redmann, AVERA President-Elect, Louisiana State University

Assessment/Evaluation and Tracking 3:30 - 5:00 p. m.
Convention Center, Room 235

Topic 1: The Relationship Between NOCTI Written and Performance Exams
Speakers: Jerome T. Kapes and Linda Martinez, Texas A&M University
Topic 2: Assessment of Junior High/Middle School Agricultural Education Programs in Nebraska
Speakers: Susan M. Fritz and Linda Moody, University of Nebraska
Topic 3: A Comparison of the Perceptions of Secondary Business and Office Education Instructors and Agricultural Education Instructors of the North Carolina Vocational Competency Achievement Tracking System (VoCATS)
Speakers: Larry R. Jewell, North Carolina State University, and Carolyn S. Jewell, Fayetteville State University
Chair: Susan L. Faulker, National Center for Research in Vocational Education, Berkeley, CA
Facilitator: James A. Gregson, Oklahoma State University

✷ Sunday, December 8, 1996 ✷

Miscellaneous Topics Related to Research in Vocational Education 8:00 - 9:30 a. m.
Convention Center, Room 235

Topic 1: Vocational Teacher Preparation in North Carolina for Integration of Academic and Vocational Education
Speakers: William D. Hartzell, Jim Flowers, and Larry R. Jewell, North Carolina State University
Topic 2: Predicting the Leadership Effectiveness of Vocational Education Administrators
Speakers: Lillian H. Daughtry and Curtis R. Finch, Virginia Polytechnic Institute and State University
Topic 3: Turnover of Baccalaureate Nurse Educators in Louisiana
Speakers: Catherine B. Holland, Southeastern Louisiana University and Michael F. Burnett, Louisiana State University
Topic 4: Coping Behaviors and Transitions of Managerial Males Who Experience Mid-life Job Loss
Speakers: Anne E. Doster, Training Consultant and Barbara M. Kirby, North Carolina State University
Chair: Debra D. Bragg, University of Illinois
Facilitator: Kirk A. Swortzel, Purdue University

AVERA PRESIDENT'S ADDRESS

Research and Teaching from the WEB / Multimedia

Michael K. Swan, Ph. D.
1995-96 AVERA President

The World Wide Web and Multimedia research and teaching has exploded across the face of higher education in the past few years. Educators are scrambling to invest time, money, space, and personnel in courses and educational strategies based around audio, video, and new computer technologies. They have enticed faculty with promises of access, interactivity, ease of use, and a potential universal presence in the lives of students and teachers. And why not? After all, successful examples of Web and Multimedia research and teaching are everywhere, new and inventive formats are announced weekly, computer and multimedia technology is in a developmental ferment, and out public-- students, their parents, trustees, and legislators -- expect and demand the newest and best instructional techniques and equipment.

But a number of practical hurdles have to be overcome before Web/Multimedia research and courses can be successfully implemented and presented in journals and the classroom. Consideration of infrastructure, equipment, personnel, and pedagogy need to be taken into account early in the planning stages of any single or coordinated Web/Multimedia teaching effort. For many faculty, the question now is not "Should I use the Web/Multimedia in my research and/or class?" but "How do I get started?" and "What does a good Web/Multimedia research plan or course contain?"

Consideration of infrastructure for delivery/retrieval of Web/Multimedia research, instructional, or learning environment is vital to program success. Before you begin creating your Internet presence or Multimedia presence the following office, equipment necessary, essential software, technical support, security, maintenance, internet assess, and personnel.

While many institutions presently have existing "media" teaching rooms, these are often set up for slide and 16mm film presentation, with sloped floors, rows of fixed seating, a pit or stage at one end from which faculty members lecture, and a screen behind the lectern. But LCD projectors, the equipment you will most likely use for presentation of your Web/Multimedia course, are hard to use in this environment: they usually must be within 20 to 30 feet of the screen and need to be at 90 degrees with respect to its surface to minimize distortion. In a theater or classroom with row seating, the line of sight of students sitting to the rear can be blocked, so seating arrangement is an issue. Set-up and take down is another issue which is vital to your Web/Multimedia course. Many times their is a five-to-ten minute wait at the beginning of the course for equipment set-up and adjustment, loading interactive lessons, or making connections to specific server locations. When considering putting course materials online, take a realistic look at your computing environment. Students and others will be accessing your research or course materials by dialing in from home, by using equipment in on-campus classrooms or labs, or through campus network connections in

dorms or other facilities. Knowing how your students will be accessing your materials is important for two reasons: connection speed and availability of access.

Be prepared to tell and explain in detail how they will be able to access your course materials. For example, identify which campus labs have Internet access and the necessary software, provide information about campus SLIP/PPP dial-in services, and describe how to obtain Internet access through a commercial internet service provider.

Connection speed will vary depending on whether students are accessing the online materials via campus network connections or by dialing in from outside the campus network. Identifying student computer hardware and software requirements should be a prerequisite to designing your online materials. After all, why spend time enhancing your instructional materials with snazzy sound clips if most of your students don't have access to a computer capable of audio playback? Similarly, there are many Web browser programs available and no two are exactly alike. Make certain that the Web features you include are supported by the browser software that your students will be using. You may want to require students to conform to a single browser with appropriate software (e.g., plug-ins and helper apps).

Technical support is one thing you can be sure of -- there WILL be technical problems to resolve. Investigate the technical support that is available to students both on and off campus. The more experience you have in working with the technology, the easier it will be to direct students to technical assistance. An abundance of equipment in classrooms poses constant security and damage problems. It is wise at the outset to recognize the risks to equipment, try to foresee problems, and building secure housing for equipment. Personnel needs are probably the biggest hidden cost and greatest practical problem in implementing Web/Multimedia courses. Labor needs are recurring and it is necessary to keep pace with development of Web/Multimedia research projects and courses.

Once you have dealt with the operational issues, now you need to become an HTML expert -- right? Well, maybe . . . but not necessarily. Some faculty will want to do it all while others will involve technical support to do it for them. Many faculty will see the challenge as a learning opportunity while others want only the end result, without the specific understanding of HTML. Fortunately, there are many different approaches to developing Web/Multimedia research or course materials.

HTML (Hypertext Mark-Up Language) is the basic "programming language" of the web. All web documents are created using HTML. But you don't necessarily have to know anything about HTML in order to create Web documents. In the past year many new software products have been developed which make the creating of HTML documents almost as easy as using standard word processing software. In addition, Microsoft and Word Perfect have HTML add-ins to their word processors. Of course, the more you know about HTML, the more sophisticated you can make your pages. If you wish to explore the higher end of technology, you can use Java, JaveScript, and CGI to add interactivity or animation.

The next challenge is that once you've created your web pages, they must be "served" an a Web server. You may need to work with your university's computing staff to move your web pages to the institution's Web server. Or, in some cases, you may opt to run your own personal or departmental Web server. Another challenge could exist if you wish to restrict access to only students in your class. In this case you will need to work with your Web server administrator to create logins and passwords for each student.

Pedagogical Issues: Departing from the Norm!

It is important not to lose sight of teaching goals as you go ahead mastering the technology. The best advice with regard to pedagogy is to take time to explore, exploit, and experiment with integrating the unique features of the technology into your teaching environment. Think beyond the traditional classroom paradigms as incorporating a few new learning paradigms.

Personalized learning environment is a concept the online and web based environment lends itself to for student-centered learning. They hypertextual organization allows materials at different levels of detail and/or difficulty to be made available to students without imposing a pre-determined path for them to follow. Students can create individually tailored paths to master the desired goals or objectives.

Collaborative learning which is encouraged shows that learners profit from environments which encourage the shared learning concept. The technology and web presents an especially good environment for asynchronous collaboration in which students work together but not necessarily at the same time. Technology and web based discussions forums have been found to enhance the participation of students in class discussions and class debates.

Multimedia presentation of content is providing an increasingly rich variety of media through which to present learning materials. Animation now give us effective methods to simulate science experiments as well as various other technical materials. In language learning sound an video can supply an electronic immersion in the target culture. This also provides a method to present the material in both visual and audtory means to reach more of our students.

Invariably the question arises that we don't know how to properly evaluate students that we can't see, hear, and interact with in person. For some, this hurdle is insurmountable; others, it offers a challenge. We have several models to follow if we wish. We just have to look around and open our eyes and see what others are really doing in their courses.

Experience has helped us to better understand the features of a technology based course environment and the tools that can enhance teaching and learning. And although the technology for teaching and learning remains in its infancy, we do have an exciting and potentially revolutionary beginning.

The questions today are where are we? Do we as a professional organization want to be part of the technology of tomorrow or do we stay as we are and fall further behind? Do we put our research out in electronic form or do we wait until tomorrow and see what happens?

RESEARCH PAPERS PRESENTED

VOCATIONAL TEACHERS' ATTITUDES TOWARD, KNOWLEDGE OF, AND USE OF NATIONAL SKILL STANDARDS

by

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Abstract:

Currently, there is a movement in the U.S. for business and industry to develop national skill standard systems for their occupations. These skill standards will be used to develop training programs and certify workers' competence. To successfully implement any new system, it is vital to know the attitudes of the people that will be involved in the implementation process. After information has been gathered and the attitudes of the key people are known, then strategies can be developed for implementing these systems. This study was conducted to determine secondary vocational teachers' awareness of, attitudes toward, and use of national skill standards. The population consisted of all the vocational teachers in secondary schools in Ohio. These teachers tended to agree that they would use national skill standards, but they lacked information about what makes up these skill standards and how these standards could be used in secondary vocational programs. In addition, these vocational teachers' awareness level and use of national skill standards was low.

VOCATIONAL TEACHERS' ATTITUDES TOWARD, KNOWLEDGE OF AND USE OF NATIONAL SKILL STANDARDS

Introduction

Many of the semiskilled jobs upon which Americans have relied are going to countries that produce workers who receive a much lower wage. This has resulted in a declining share of the international market for the U.S. In addition, competing nations with larger shares of the global market have had well-educated work forces, high-skilled manufacturing economies, and rapid adaptation of new technology (Office Educational Research and Improvement, 1995).

In the last decade, there has been an abundance of reports questioning how well the U.S. education system prepares students for employment or further education (National Commission on Secondary Vocational Education, 1984; National Commission on Excellence in Education, 1983; and Commission on the Skills of the American Workforce, 1990). Many of these reports called for higher standards and an increased emphasis on academics. Other research-based reports (Bracey, 1995, 1994, 1993, 1992, 1991 and Carson, Huelskamp, & Woodall, 1992) contradicted these findings and provided evidence that American schools are performing better than ever. Whether or not education has been effective, efforts to improve its outcomes are always desirable. One suggested approach to increase student performance and the accountability of public education would be to use national skill standards.

Skill standards have been developed to identify what knowledge and abilities a worker should possess to successfully gain and maintain employment in the workplace (Hudelson, 1993). Some occupations such as doctors, lawyers, and accountants have had state standards for some time. These professionals were required to pass tests to demonstrate their knowledge and skills (Hudelson). Skill standards helped guarantee that these individuals had the necessary requirements in their area of speciality.

Skill standards that have been developed vary greatly between occupations due to the nature of the speciality of work done. Definitions of skill standards have also varied between occupations. There are four basic areas in which standards have been set: technical skills, employability skills, related occupational knowledge, and academic skills (Hoachlander & Rahn, 1994; National FFA Foundation, 1994; Kaplan & Seymour, 1994). For certification, some occupations used a mixture of these skill areas while others may have included only one.

Skill standards that have been used in vocational education programs were often developed by educators with limited participation from business and industry. Although these standards may be accurate measures of a student's knowledge and ability, they may not have matched what is needed in industry. Hudson (1994) wrote, " . . . that if a nation is going to succeed in producing a more productive work force, schools must know definitively what industry expects of new workers" (p. 6). Business, industry and education need to work together in developing skill standards for the different occupations.

The U.S. Departments of Education and Labor awarded grants to twenty-two business, labor, and education technical committees representing a variety industries and occupations. These projects were charged with identifying and developing national skill standard.

To ensure that vocational program curriculums were matched with the needs of business and industry, the Ohio Division of Vocational and Career Education assembled the Ohio Competency Analysis Profiles (OCAPs) for each vocational area. The development of these OCAPs involved a joint effort between business, industry, labor, and community agency representatives from throughout the state. The General Accounting Office (1993) suggested that business and industry take the leading role in this development process. Hudelson (1993) indicated that skill standards were becoming a major force of national economic and education policy.

There has been a move by some industries to voluntarily start their own national skill standards. For example, the National Institute for Automotive Service Excellence (ASE) was formed to protect citizens from the unscrupulous members and help the automobile repair industry gain back public trust. Sutphin (1994) wrote " . . . the dishonest mechanics brought about the need for certification of all auto repair technicians" (p. 26).

There have been many advocates for a national skill standard system, along with many statements of benefits for this system and the impact that it would have on the economy, educational systems, the work force, and society. Hoachlander and Rahn (1994) listed the following potential benefits of a skill standard system: (a) greater work mobility and portability of credentials; (b) higher pay; (c) greater job certainty and more job opportunities for workers; (d) more efficient recruitment, screening and placement of employees by employers; (e) clearer goals and educational pathways for students; (f) more consistent, focused instruction and curriculum; (g) greater accountability for schools, programs, teachers and students; (h) increased quality of products and services; and (I) higher consumer confidence and satisfaction (p. 20).

Glover (1992) stated that skill standards would also increase the accountability for the expenditure of public monies. Hudelson (1993) indicated that national skill standards offered accountability in the following areas: (a) national skill standards recognize workers as being certified or accomplished craftspersons; (b) skill standards would indicate the level of competence employers could expect from employees; (c) skill standards would define for teachers what knowledge and skills that industry expects of the graduates from their vocational education programs; and (d) skill standards provide a fair means for administrators to use in the evaluation of vocational education programs.

Conceptual Framework

Once skill standard systems have been developed, they will need to be properly implemented if they are going to be effective in developing training programs and certifying workers' competence. To successfully implement any new system or program, information is needed regarding individuals' awareness of the system or program. Once the awareness level has been determined, Fishbein and Ajzen (1975) stated that it is important to know the attitudes

of the individuals that will be implementing the program. In addition, Fishbein and Ajzen indicated that the individuals' attitude is a major determinant in a person's performance of the behaviors in question, which in this case is the use of skill standards. Thus, if vocational teachers are to use national skill standards in their vocational programs, their awareness of and attitudes toward these skill standards should be determined prior to implementation.

Problem Statement

Performance measures and standards have the potential for impacting what is taught, how it is taught and how it is evaluated. However, vocational teachers need to be aware of and possess positive attitudes toward skill standards if they are to use them in planning and modifying their programs. Information about vocational teachers' awareness of, attitudes toward, and use of national skill standards is not available.

Purpose and Objectives

The purpose of this study was to determine Ohio vocational teachers' awareness of, attitudes toward, and use of national skill standards. The specific objectives were to: (a) determine the awareness level of Ohio vocational teachers about national skill standards; (b) measure attitudes of Ohio vocational teachers toward national skill standards; and (c) determine the use of national skill standards by Ohio vocational teachers.

Population and Sample

The population for this study was all secondary vocational teachers within the state of Ohio (N = 3,499). A mailing list of these teachers for the 1994-95 academic year was obtained from the Ohio Department of Education stratified by program area (i.e., agriculture, business occupations, home economics, marketing, and trade and industrial). Duplicate names were purged from the list to control for selection error. For this population, Krejcie and Morgan (1970) recommended a sample size of 346. A proportional stratified random sample by program area was drawn. Table 1 displays information regarding the number of teachers by strata in the sample.

Table 1

Stratification of the Sample (n = 346)

Service area	Number of teachers	Percentage of total pop.	Sample size	Number of useable res.	Percent of respondents
Health	187	5	17	11	65
Trades and Industrial	1442	41	142	89	63
Home Economics	260	8	28	16	57
Marketing Education	319	9	31	18	58
Business Education	806	23	80	46	58
Agricultural Education	485	14	48	25	52
Total	3499	100	346	205	59

Categorical information about the respondents is presented in Table 2. The respondents included more male (51.7%) vocational teachers than female (44.7%). The trade and industrial service area had the largest number of respondents (42.4%) followed by business occupations (22.0%). These two service areas represented approximately two-thirds (64%) of the vocational teachers within the State of Ohio (Table 1).

Table 2

Categorical Demographic Information (n = 205)

Variable of interest	Frequency	Percentage
Gender:		
Male	106	51.7
Female	87	42.4
Non-response	12	5.9
Vocational Teaching Area:		
Agriculture	22	10.7
Business Occupations	45	22.0
Marketing	17	8.3
Home Economics	15	7.3
Trade and Industrial	87	42.4
Health	7	3.4
Non-response	12	5.9
Highest Educational Level:		
High School Diploma	32	15.6
Associate Degree	19	9.3
Bachelor's Degree	71	34.6
Master's Degree	71	34.6
Non-response	12	5.9
Type of High School:		
Comprehensive	80	39.0
Joint Vocational School	108	52.7
Non-response	17	8.3
Initial Teaching Certification:		
Alternative Certification	88	42.9
Bachelor's Degree	102	49.8
Master's Degree	4	2.0
Non-response	11	5.4
Technically Certified:		
Yes	162	79.0
No	30	14.6
Non-response	13	6.3

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From this sample of vocational teachers, slightly more than two-thirds (69.2%) had completed a bachelor's (34.6%) or master's (34.6%) degree. Teachers with an associate's degree or less represented slightly less than one-fourth (24.9%) of the teachers. Slightly more than one-half (52.7%) of the respondents indicated they taught in joint vocational schools. The most common way that respondents received their initial certification was by the means of a bachelor's degree (49.8%). More than three-fourths of the respondents (79.0%) indicated that they were technically certified.

Ratio data regarding the respondents was reported in Table 3. Ages of the respondents ranged from twenty-three to sixty-four years. The mean age of respondents was 45.6 (SD = 8.15). Almost all vocational teachers in this study indicated that they had some work experience prior or concurrent to teaching with a mean of 11.55 years (SD = 8.08). This work experience ranged from one to forty years. The average number of years taught by respondents was 15.35 (SD = 7.85) with a range of one to thirty-four years.

Table 3

Ratio Demographic Information (n =194)

Variable of interest	Mean	Std. Dev.
Age (years) Range 23 - 64	45.60	8.15
Number of years taught Range 1 - 34	15.35	7.85
Years of work experience (excluding teaching experience) Range 1 - 40	11.55	8.08

Design and Instrumentation

A descriptive research design was used with data collected by a mail survey. This instrument was developed by the researchers and consisted of three sections. Section I included sixty-two items designed to determine the attitudes of vocational teachers using a five-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree). Three types of attitudes--evaluative (affective), knowledge (cognitive), and use (behavioral)--identified by Pettyjohn, Banikart, Fitzgerald, Misovich, Spiegler and Triplet (1986) guided the development of items for the survey instrument. Section II was designed to measure the awareness level and use of skill standards by vocational teachers. This section consisted of a list of thee twenty-two occupations funded by the Departments of Education and Labor to develop national skill standards. For each occupation, the respondent was asked to indicate their perceived awareness level (1 = not aware, 2 = limited awareness, 3 = somewhat aware, 4 = very aware) and whether they had or had not used these standards. Section III included demographic information about these vocational teachers.

Section I of the initial questionnaire consisted of 95 statements which were assembled from the review of literature. A panel of nine graduate students in vocational education examined the questionnaire for content and face validity. Items were changed according to their suggestions. To establish the reliability, the questionnaire was then sent to a sample of twenty-eight vocational teachers who were randomly selected from the population, but not in the original sample. Section I of the instrument was reduced to 62 statements and the resulting Cronbach's alpha coefficient of .87 for internal consistency was obtained. A test-retest was also conducted to test for consistency over time. The percent of agreement of the test-retest for section I was 82%. For section II of the instrument a test-retest was also conducted. The percent of agreement was 87% for the awareness of skill standards and 97% for the use of skill standards.

Data Collection

Individuals selected to participate in this study were mailed a packet including a questionnaire, cover letter, and self-addressed stamped envelope. After the initial mailing, individuals who had not returned the questionnaire by the end of the second week received a reminder postcard. A second packet was sent out the third week that contained a reminder letter, questionnaire, and self-addressed stamped envelope. At the end of the sixth week 212 (61%) questionnaires were returned from vocational teachers in the sample. A total of 205 (97%) of the 212 surveys that were returned were usable. Follow-up of non-respondents was accomplished by taking a 10% random sample of non-respondents as recommended by Miller and Smith (1983). These non-respondents were contacted by telephone and asked for their views regarding 15 randomly selected attitudinal items, all items concerning use and awareness of skill standards, and their demographic characteristics. The mean scores of respondents and non-respondents on the vocational teachers' awareness of skill standard, attitudes toward skill standards, and use of skill standards were compared using a t test. No significant differences were found between the two groups of respondents and non-respondents, therefore, the results were generalized to all Ohio secondary vocational teachers.

Data Analysis

Descriptive statistics were used to report the frequencies and percentages of responses of vocational teachers' awareness of, attitude toward, and use of skill standards. Negative items were reversed for the analysis. An overall mean and standard deviation was calculated in order to determine the total attitudinal score.

Findings

Table 4 details the teachers' attitude toward skill standards. Item 1 had a modal response of strongly agree (5), for which fifty-nine percent of respondents indicated that students who have met entry level skill standards would have a smoother transition from school to work. Forty-one statements had a modal response of agree (4). In this discussion, only items with modes that include sixty percent or more of the responses will be discussed. Respondents agreed with item 15--that they used Ohio Competency Analysis Profiles standards to develop assessment techniques in their vocational programs (70%); item 55--they used Ohio

Competency Analysis Profiles standards to develop curriculum in their vocational program (70%); and item 23--they used employability skills as a means for assessment of students' abilities in the vocational area that they taught (69%). Additionally, respondents agreed with item 12--national skill standards provide a bench mark for comparing skill levels (63%); item 38--a national skill standard system should be able to meet the changes in technology (62%); item 39--multiple levels of mastery should be a characteristic of a national skill standard system (62%); item 47--national skill standards provide a basis for educational goals (62%); item 36--national skill standards should help identify competent individuals for employment (61%); item 21--skill standards provide the basis for measuring an individual's ability (60%); and item 32--they used the Ohio Competency Analysis Profiles standards developed by the state in the vocational program that they taught (60%).

Table 4

Secondary Vocational Teachers' Attitudes Toward Skill Standards (n = 205)

Item number	Mode	f	%	Range
1. Students that have met the entry level skill standards will have a smoother transition from school to work than those who do not.	5	120	59	3-5
2. I believe that national skill standards enhance vocational education programs.	4	80	39	1-5
3. I have added standards to Ohio Competency Analysis Profiles based upon recommendations of business and industry.	4	105	51	1-5
4. Vocational programs that use national skill standards are more effective than those who do not use skill standards.	3	80	39	1-5
5. National skill standards are too specific.[a]	3	106	52	1-5
6. National skill standards will demand more accountability of vocational education programs than what is presently required.	3	120	59	1-5
7. National skill standards will improve occupational training.	4	93	45	1-5
8. The federal government should support the development of a national skill standard system.[b]	4	66	32	1-5
	3	65	32	1-5
9. National skill standards should decrease the time required by employers to screen employees.	4	93	45	1-5
10. A national skill standard system would purge vocational education of its mediocre teachers.	3	71	35	1-5
11. National skill standards would require vocational education to be market driven.	4	95	46	1-5
12. National skill standards provide a bench mark for comparing skill levels.	4	129	63	1-5
13. National skill standards should encourage students to take more ownership of their skill development.	4	104	51	1-5
14. Skill standards will help improve the vocational program that I teach.	4	76	37	1-5
15. I use Ohio Competency Analysis Profiles standards to develop assessment techniques in my vocational program.	4	143	70	1-5
16. Skill standards will make vocational education programs more accountable.	4	110	54	1-5

(table continues)

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Table 4 (continued)

Item number	Mode	f	%	Range
17. National skill standards will establish an unfair method of assessing students' abilities.[a]	3	85	42	1-5
18. National skill standards should not be an integral part of vocational education programs.[a b]	3	67	33	1-5
	4	65	32	1-5
19. National skill standards should have a positive effect on the productivity of the American work force.	4	112	55	1-5
20. Other countries have successfully used national skill standard systems.	3	177	86	1-5
21. Skill standards provide the basis for measuring an individual's ability.	4	123	60	1-5
22. I am not at all familiar with the national skill standards for my vocational program.[a]	2	66	32	1-5
23. I use employability skills as a means for assessment of students' abilities in the vocational area that I teach.	4	141	69	2-5
24. Knowledge of subject area is not adequately assessed by skill standards.[a]	3	85	42	1-5
25. National skill standards will lower employer recruiting costs.	3	107	52	1-5
26. Vocational educator's technical competence will need to be upgraded in order to meet industry skill standards.	4	87	42	1-5
27. National skill standards would force closer alliances between education and business/industry.	4	120	59	1-5
28. National skill standards should have a positive effect on vocational programs.	4	115	56	1-5
29. Skill standards should be used by business and industry to determine who should be promoted.	3	84	41	1-5
30. A vocational education program that uses national skill standards will have a better reputation than those which do not use national skill standards.	3	80	39	1-5
31. With a national skill standard system in place, industry would demand better qualified students from vocational programs.	4	101	49	2-5
32. I currently use the Ohio Competency Analysis Profiles standards developed by the state in the vocational program that I teach.	4	122	60	1-5
33. A national skill standard system will be detrimental to vocational education.[a]	3	91	44	1-5
34. The skill standards I currently use in my vocational program do not match with those in business and industry.[a]	4	113	55	1-5
35. I would adhere to an industry based skill standard system for my vocational program.	4	116	57	1-5
36. National skill standards should help identify competent individuals for employment.	4	125	61	1-5
37. A national skill standard system will be a worth while investment.	3	89	43	1-5
38. A national skill standard system should be able to meet the changes in technology.	4	128	62	1-5
39. Multiple levels of mastery should be a characteristic of a national skill standard system.	4	127	62	1-5
40. I have not received assistance from the State Department of Education in implementing Ohio Competency Analysis Profiles.[a]	4	91	44	1-5

(table continues)

Table 4 (continued)

Item number	Mode	f	%	Range
41. I would not use national skill standards developed by business and industry in my vocational program.[a]	4	98	48	1-5
42. National skill standards should increase the competitiveness of America in the global market place.	4	100	49	1-5
43. Other countries have successfully developed national skill standard systems.	3	181	88	1-5
44. National skill standards should improve the quality of America's goods.	4	91	44	1-5
45. National skill standards need to be very specific.	4	78	38	1-5
46. Students who have met the skill standards for their occupation should receive higher wages than those who do not.	4	106	52	1-5
47. National skill standards provide a basis for educational goals.	4	126	62	1-5
48. I am familiar with skill standards that have been set in the vocational area that I teach.	4	97	47	1-5
49. Students from vocational programs with industry certification have higher level skills than students from vocational programs without such certification.	3	97	47	1-5
50. Business and industry should play the most important part in the development of national skill standards.	4	92	45	1-5
51. National skill standards will lower employer training cost.	3	87	42	1-5
52. National skill standards will help to sort out students that are not serious about their vocational program.	4	99	48	1-5
53. I have a strong understanding of skill standards within the vocational area that I teach.	4	102	50	1-5
54. National skill standards will help students to focus on their preparation for work.	4	112	55	1-5
55. I use Ohio Competency Analysis Profiles standards to develop curriculum in my vocational program.	4	142	70	2-5
56. Development of a national skill standard system should be the responsibility of business and industry.	3	69	34	1-5
57. A national skill standard system would not have any effect on how America will educate its children.[a]	4	100	49	1-5
58. I currently use portfolios as a means of assessment of students' abilities.	4	98	48	1-5
59. I would not use skill standards as a means for assessment of students within the vocational area that I teach.[a]	4	95	46	2-5
60. National skill standards are too rigid.[a]	3	120	59	1-5
61. National skill standards should not be portable across the nation.[a]	3	87	42	1-5
62. Students that complete a high school vocational program should be able to meet entry level job requirements.[b]	5	96	47	2-5
	4	94	46	2-5
Overall mean for vocational teachers' attitude toward skill standards.	3.51(M)		.423(SD)	

Note. Rating scale was 1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly agree. Scores of negative items were reversed

[a]Denotes negatively stated items. [b]Denotes items that are bi-modal.

Nineteen of the items received modal response of undecided (3). Once again, only the items with sixty percent response rate or higher will be discussed. Vocational teachers were undecided about item 43--whether other countries had successfully developed national skill standards systems (88%) or item 20--whether other countries had successfully used national skill standard systems (86%).

Only one item had a modal response of disagree (2). Respondents disagreed with item 22--they were familiar with the national skill standards for their vocational program (32%). There were no items with a modal responses of strongly disagree (1).

Three of the statements had bi-modal responses. Bi-modal was defined as having the number of respondents being within two responses between categories. Respondents were split between being undecided (3) or agreeing (4) that the federal government should support the development of a national skill standard system (item 8) and that national skill standards should be an integral part of vocational education programs (item 18). Vocational teachers responses were evenly divided between strongly agree (5) and agree (4) that students that have completed a high school vocational program should be able to meet entry level job requirements (item 62). The overall mean for the attitude of vocational teachers toward skill standards was 3.51 with a standard deviation of .423.

Section II of the instrument was designed to determine whether or not vocational teachers were aware of and had used occupation skill standards. On the questionnaire there were four response areas for vocational teachers to indicate their level of awareness of skill standards (1 = not aware, 2 = limited awareness, 3 = somewhat aware, 4= very much aware). Since there was a very small number of individuals that indicated the last three responses (limited awareness, somewhat aware, very much aware) toward awareness, the responses were classified as being either aware or not aware. Most all of the vocational teachers in Ohio were unaware of all twenty-two occupational skill standards areas (Table 5). Skill standard areas that vocational teachers were most aware of were Automotive, Auto Body, and Truck Technicians (22.9%), Welding Occupations (22.4%), and Computer Aided Drafting (22.4%). Table 5 also included the indicated use of skill standards by vocational teachers. The three most frequently used skill standards were: Automotive, Auto Body, and Truck Technicians (9.3%), Welding Occupations (9.3%), and Computer Aided Drafting (8.8%). The rest of the skill standards were used by less than 8 percent of the respondents. It should be noted that individuals that indicated any awareness of skill standards, were not necessarily in the program area that would use such standards. For example, vocational teachers from different vocational areas indicated that they were aware of skill standards in Welding Occupations but they had not used these standards.

Table 5

Awareness and Use of Skill Standards by Ohio Vocational Teachers (n = 205)

Skill standard area and grantee	Were aware f	Were aware %	Have used f	Have used %
1. Agriscience/Biotechnology (National FFA Foundation)	34	16.6	15	7.3
2. Air Conditioning, Refrigeration and Power (Southern Association of Colleges and Schools)	25	12.2	7	3.4
3. Automotive, Auto Body and Truck Technicians (National Automotive Technical Education Foundation)	47	22.9	19	9.3
4. Biotechnical Sciences (Education Development Center)	15	7.3	6	2.9
5. Chemical Process Industries (American Chemical Society/EDC)	13	6.3	3	1.5
6. Computer Aided Drafting (Foundation for Industrial Modernization)	46	22.4	18	8.8
7. Electronics (Electronics Industries Association)	35	17.1	11	5.4
8. Food Marketing Industry (National Grocers Association)	37	18.0	11	5.4
9. Forest/Wood Products (Production and Manufacturing Foundation for Industrial Modernization)	26	12.7	9	4.4
10. Hazardous Materials Management Technician (CORD)	38	18.5	15	7.3
11. Health Science and Technology (Far West Laboratory)	18	8.8	6	2.9
12. Heavy Highway/Utility Construction (Laborers-AGC Education and Training Fund)	13	6.3	5	2.4
13. Human Services Occupations (Human Services Research Institute/EDC)	25	12.2	7	3.4
14. Photonics Technician (CORD)	9	4.4	1	0.5
15. Printing (The Graphic Arts Technical Foundation)	29	14.1	7	3.4
16. Welding Occupations (American Welding Society)	46	22.4	19	9.3
17. Electronics (American Electronics Association)	31	15.1	10	4.9
18. Electrical Construction (National Electrical Association)	39	19.0	14	6.8
19. Industrial Launderers (Institute of Industrial Launderers)	8	3.9	3	1.5
20. Metalworking (National Tool and Machining Association)	30	14.6	8	3.9
21. Retail Trade (National Retail Federation)	27	13.2	10	4.9
22. Tourism, Travel and Hospitality (Council on Hotel, Restaurant and Institutional Education)	36	17.6	15	7.3

Implications and Recommendations

The low level of Ohio vocational teachers awareness of skill standards indicates that this is an area that demands a more concentrated effort from proponents of national skill standards. If standards are to be used by vocational teachers then their awareness level and attitudes toward skill standards need to be increased. Individuals working with occupations that are identifying and developing skill standards will need to increase their efforts of promoting skill standards to vocational teachers and teacher educators.

This study provided evidence for the need to further educate secondary vocational teachers about national skill standards. If these standards are to be used, vocational teachers must first be made better aware and knowledgeable about standards if they are to support them. Some ways that the attitudes of these vocational teachers may be increased are through their participation in educational programs sponsored by professional organizations related to their

service area such as American Welding Society, National Automotive Technical Education Foundation, Electronics Industries Association, and Council on Hotel, Restaurant and Institutional Education. In addition, vocational teachers should participate and be active in both state and national vocational education associations where these topics are addressed. The respondents' attitudes were most favorable for the use of skill standards (items 15, 23, 32, 34, 55) as indicated by the number of responses to these statements, even though there was ample room for improvement in this area. It should also be noted that the standards set by the state (Ohio Competency Analysis Profiles) were being used by vocational educators to develop curriculum and assessment techniques in their vocational programs.

Ohio vocational teachers indicated that they would use national skill standards in their vocational programs, but they lacked information about what makes up these skill standards and how these standards could be used in secondary vocational programs. The information from this study should be used in the design of pre-service education programs. Additionally, vocational teacher educators can use this information to develop and implement in-service. Knowledge of these standards also will help vocational teachers in planning, improving, and evaluating their programs.

References

Bracey, G. W. (1991). Why can't they be like we were? Phi Delta Kappan, October, pp. 104-17.

Bracey, G. W. (1992). The second Bracey report on the condition of public education. Phi Delta Kappan, October, pp.104-17.

Bracey, G. W. (1993). The third Bracey report on the condition of public education. Phi Delta Kappan, October, pp.104-17.

Bracey, G. W. (1994). The fourth Bracey report on the condition of public education. Phi Delta Kappan, October, pp.114-127.

Bracey, G. W. (1995). The fifth Bracey report on the condition of public education. Phi Delta Kappan, October, pp. 149-160.

Carson, C. C., Huelskamp, R. M., & Woodall, T. D. (1992). Perspectives on Education in America. The Journal of Education Research, 86(5).

Commission on the Skills of the American Workforce. (1990). America's choice: High skills or low wages! Rochester, NY: The National Center of Education and the Economy.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley Publishing.

General Accounting Office. (1993). Skill standards: Experience in certification systems shows industry involvement to be key. Report to the chairman, joint economic committee, U.S. Congress (GAO/HRD-93-90). Washington, DC: U.S. General Accounting Office.

Glover, R. W. (1992, Summer). Skill standards. Work force, 1, 12-22.

Hoachlander, G., & Rahn, M. L. (1994). National skill standards: Everyone agrees on the destination. Getting there is another story. Vocational Education Journal, 69(1), 23-25.

Hudson, J. L. (1994). Skill standards will come with a price tag. Vocational Education Journal, 68(1), 6.

Hudelson, D. (1993). The standard approach: Skill certification on the way; is vocational education ready? Vocational Education Journal, 68(2), 32-34.

Hull, D. (1994). Skill Standards Report. Waco, TX: Center for Occupational Research and Development.

Kaplan, I., & Seymour, W. (1994). Building consensus: How the electronics industry is developing skill standards. Vocational Education Journal, 69(1), 23-25.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30, 607-710.

National Commission on Excellence in Education. (1983). A nation at risk: The imperative for educational reform. Washington, DC: U.S. Department of Education.

National Commission on Secondary Vocational Education. (1984). The unfinished agenda. Columbus, OH: The National Center for Research in Vocational Education. The Ohio State University.

National FFA Foundation. (1994). National Voluntary Occupational Skill Standards. Agricultural Biotechnology Technician. Madison, WI: Author.

Office of Educational Research and Improvement. (1995). The national assessment of vocational education. Final Report to Congress, Volume I, Summary and Recommendations. Washington: U.S. Department of Education.

Pettyjohn, T., Banikart, P., Fitzgerald, H., Misovich, S., Spiegler, M., and Triplet, R. (1986). The Encyclopedic Dictionary of Psychology, Third Edition. Guilford, CN: The Dushkin Publishing Group, Inc.

Sutphin, E. (1994). Following the ASE lead: A working model for national certification. Vocational Educational Journal, 69(1), 26-27.

PREDICTING THE LEADERSHIP EFFECTIVENESS OF VOCATIONAL EDUCATION ADMINISTRATORS

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Abstract

Effective leadership provided by the local vocational administrator is crucial to the successful implementation of educational change. To effectively lead and move others through the transformation of vocational education, the vocational administrator must be ready to creatively approach change and establish a climate of opportunity for everyone. This study addressed leadership effectiveness of vocational administrators as a function of gender and leadership style. The Multifactor Leadership Questionnaire was used in the study to reveal both self-perceptions and others-perceptions of rated effectiveness and leadership style. Transformational leadership was the predominant style revealed. Gender and transformational leadership style best predicted self-perceived effectiveness, while only transformational leadership behaviors predicted others-perceived effectiveness.

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Vocational education must begin its own transformation if it is to remain a viable form of education in the new environment. Leaders are needed who can point to new directions and who can influence others to believe and to follow. (Moss, Lambrecht, Jensrud, & Finch, 1994b, p. 2)

Introduction

Historically, vocational educators and policy makers have listened to labor market needs and responded to changes in society by expanding vocational service areas or by targeting special populations. Passage of the Carl Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II) initiated major changes in vocational education (Wirth, 1992). Perkins II sought to improve academic as well as technical skills of vocational students. This legislation granted more power to local school divisions in expenditure of funds and emphasized a broad integration of academic and occupational education (Wirt, 1991; Wirth, 1992). For the first time, vocational educators were required to work collaboratively with academic educators in curriculum integration. Vocational education has thus been moving from a narrow skill-based training focus to focusing on "all aspects of the industry" in which abilities learned may be useful in many occupations throughout a particular industry (Boesel & McFarland, 1994; Rosenstock, 1991). The substantive change from former legislation in which vocational educators had been bound by law to keep their funds and programs separate from academic programs is significant. Funding stipulations now require evidence of the integration of academic and vocational programs instead of separation.

Another dramatic change is the decentralization of funding. Under the basic grant, 75 per cent of the funds go directly to the local level (Wirt, 1991; Wirth, 1992). Local systems are responsible for developing plans that reflect the expenditure of funds and efforts for program improvement (Wirt, 1991). Students in selected technical areas are now able to progress from high school to postsecondary technical programs in a seamless manner as a result of the initiation of technical preparation (tech prep) programs. Local vocational education administrators have the ultimate responsibility for interpreting federal legislation and insuring its implementation.

Effective Leadership

Faced with the challenges and opportunities for change, vocational administrators are charged with the responsibility, but not always the authority, of effectively inspiring and leading other educators. Mitchell and Tucker (1992) suggest that the "thinking that lies behind effective leadership is complex and varied" (p. 30). They went on to suggest that educators have typically considered effective leaders to be those who "take charge and get things done" (p. 30). Another indicator of an effective leader, recognized especially during times of change, is the feeling expressed or the attitude followers have toward their leader (Bennis & Nanus, 1985; Yukl, 1981, 1994). Mitchell and Tucker (1992) stated that "leadership is less a matter of aggressive action than a way of thinking and feeling" (p.31). Fullan (1992) suggested that a collaborative work culture promotes the individuality of followers by respecting their contribution in setting the organizational vision. Thus, an effective leader in organizations experiencing change is one who initiates a vision and motivates followers to collectively develop and personally adopt the

vision. According to Bennis and Nanus (1985), the leader "empowers [sic] others to translate intention into reality and sustain it" (p. 80).

To successfully motivate vocational educators to transform from traditional ways of skill-specific job preparation to a new broad-based integrative education, the leader must be effective in inspiring trust and respect. To effectively lead and move others through the transformation of vocational education, the vocational administrator must be ready to creatively approach change and establish a climate of opportunity for everyone. The success or effectiveness of any change in schools rests ultimately with the "front line workers" -- the teachers. However, the ways a leader, i.e., vocational administrator, initiates changes and involves followers (teachers) in making changes affects the followers' attitudes toward leader and program effectiveness. Effective leadership provided by the local vocational administrator is crucial to the successful implementation of educational change (Moss, Finch, & Johansen, 1991).

What distinguishes those who lead from those who do not lead? Some administrators are clearly more effective leaders than others. The leader initiates a vision and motivates others to adopt the vision which may be thought of as the *process* of leadership (Moss, Lambrecht, Jensrud, & Finch, 1994a, 1994b). An effective leader is often judged more by the *property* of leadership, that is, the feeling or attitude followers have about their leader rather than actual tasks completed in the changing environment (Bennis & Nanus, 1985; Mitchell & Tucher, 1992; Moss et al 1994a, 1994b; Yukl, 1981). Gaining trust and respect from followers is important to organizational and leader effectiveness. An effective leader strives to establish a collaborative work culture that recognizes each person's contribution to the organization (Bass & Avolio, 1990; Bettin, Hunt, Macaulay, & Murphy, 1992; Fullan, 1992). The effective vocational leader initiates a vision for change and motivates others to adopt the vision as their own (Bass, 1990; Bass & Avolio, 1990; Bennis & Nanus, 1985). Bettin, Hunt, Macaulay, and Murphy (1992) explained their criteria for effective leadership was the way the leader behaves, the relationship the leader has with followers, and the priorities set for both themselves and the organization. Perceptions of effective leadership vary according to the situation or organizational structure.

New Leaders

As the American workforce experiences significant shifts in demographic composition, leaders who emerge and are responsive to the shifting needs of educational reform and the organizational culture may not reflect the traditional image of a leader. Traditionally, formal administrative positions in education have been dominated by men. While this situation still exists, women are beginning to assume more administrative roles as education restructures itself (Hill & Ragland, 1995; McGrath, 1992; Shakeshaft, 1987). The shift in educational administration reflects the change in the American workforce (Morrison, 1992).

The projected diverse workforce and the increase of females in vocational administrative positions coincide with vocational education reform. For a long time the attributes associated with leading were command, control, and top down management (Moss et al., 1994a). According to McGrath (1992), many women who have achieved leadership positions have found it necessary to assume male-like characteristics. Eagly, Darau, and Makhijani (1994) found that male and female leaders are equally effective, especially in educational settings.

Purpose and Objectives

This study addressed leadership effectiveness of vocational administrators as a function of gender and leadership style. Significant changes are occurring in vocational education that affect the organizational structure and in turn affect the vocational administrator's role. The transformational and transactional leadership models (Bass, 1985, 1990) have a number of implications for vocational education. According to theory, current and future changes are more effectively implemented when leaders exhibit transformational leadership behaviors (Finch, Gregson, & Faulkner, 1991; Van Ebron & Burke, 1992). The transformational leader promotes a culture of follower empowerment and collaboration among the group for the good of the group. As compared to transactional leadership, transformational leadership relates more strongly to followers' perceptions of leader effectiveness (Bass, 1990; Waldman, Bass, & Yammarino, 1990).

In this study, leadership style was measured using the Multifactor Leadership Questionnaire (MLQ) (Bass & Avolio, 1990). This questionnaire has two parallel forms: self-rating and other-rating (rater). The questionnaire assesses leadership style and organizational outcomes. Vocational administrators completed the self-rating form and vocational teachers completed the other-rating form, in seeking answers to the following research questions:

1. To what degree do vocational administrators use perceived transformational, transactional, and laissez-faire leadership behaviors?
2. Which leadership style behaviors (e.g., charisma, intellectual stimulation, contingent reward, etc.) differ between male and female vocational administrators for both self-perceived leadership effectiveness and others-perceived leadership effectiveness?
3. What administrator characteristics (e.g., leadership style, gender, position) can be used to predict self-perceived leadership effectiveness and others-perceived leadership effectiveness?

Conceptual Framework

The conceptual framework for this study focused on the perceived leadership effectiveness of vocational administrators based on the theory of transformational leadership. Much of the current research on effective leadership and leaders has focused on transformational leadership. The type of leaders needed during times of reform and change seems to reflect the transformational leadership paradigm proposed by B. M. Bass (1985) in his theory of leadership. The transformational leadership idea was first mentioned by Downton (1973), furthered developed by J. M. Burns (1978), and was elaborated on by Bennis and Nanus (1985). In 1985, B.M. Bass "presented a formal theory of transformational leadership as well as models and measurements of its factors of leadership behavior" (Bass & Avolio, 1994, p. 2). Van Ebron and Burke (1992) and Burns (1978) stated that a leader relates to followers as either a transformational or transactional leader. However, research has indicated that leaders often use a combination of transactional and transformational leadership behaviors (Bass, 1985; Bass & Avolio, 1990; Moss et al., 1994b).

The transformational leadership model described by Bass and Avolio (1991) contained four behavioral components: idealized influence, inspirational leadership, intellectual stimulation, and individualized consideration. A fifth behavioral component, attributed

charisma, is sometimes also included (Bass & Avolio, 1991). Bass and Avolio (1990) considered idealized influence and charisma as the same factor for a while, but have now made distinctions between these two factors. A transformational leader may employ one or more of the five behaviors. Persons who follow the transformational leader are willing to put the vision and goals of the organization as a whole above their own personal desires. The transformational leader encourages and nurtures the individual development of those in the organization in such a way that workers feel like, and actually are, a significant and valued part of the organization. The transformational leader listens to ideas and thoughts of individuals throughout the organization and maintains open lines of communication.

Transactional leadership as defined by Bass and Avolio (1994) is based on contingent reinforcement which is divided into contingent reward and management-by-exception. In contingent reward leadership, an exchange occurs between the leader and follower based on the performance of designated tasks. The contingent reward system of leadership or management has been more effective in motivating others to higher levels of performance than management-by-exception, but not as effective as transformational leadership (Bass & Avolio, 1990, 1994). In management-by-exception, the leader only becomes involved when a problem arises, thereby supporting the status quo (Bass & Avolio, 1990). Bass and Avolio (1994) divided management-by-exception into active and passive categories, depending on whether the leader actively monitors followers' work or passively waits for mistakes to occur and then takes action.

A third form of "leadership" presented by Bass and Avolio (1990) is laissez-faire or non-leadership. According to Bass and Avolio (1994), the laissez-faire leader avoids leadership by not interacting with followers, and is, for this reason, ineffective. "Decisions are often delayed; feedback, rewards, and involvement are absent; and there is no attempt to motivate followers or to recognize and satisfy their needs" (Bass & Avolio, 1990, p. 20).

Transformational leaders create change while "transactional leaders tend to work within the system to preserve the status quo" (Silins, 1992, p. 319). The study of transformational and transactional leadership is quite extensive in the areas of business and the military, but limited in education and especially in vocational education. Moss, Finch, and Johansen (1991) have stated that vocational education is currently experiencing unstable times and must begin "its own transformation if it is to remain a viable form of education in the new environment" (p. 7). Therefore, this study will contribute to the body of knowledge about effective leadership of male and female vocational administrators in relation to the theory of transformational leadership (Bass, 1985, 1990; Bass & Avolio, 1990, 1994).

Procedures

Sample

The study involved a sample of vocational administrators in Virginia and vocational teachers selected by the administrators. An accessible population of 134 administrators were invited to participate in the study, which provided a statewide perspective on the current vocational administrators' leadership behaviors and perceived effectiveness. Cross tabulations were performed in order to describe the demographic characteristics of the vocational administrators responding to the questionnaire. The descriptive items included ethnicity, gender, age, position, and the number of years as an administrator or

supervisor. In addition to self-ratings, 260 usable other-ratings completed by teachers were included in the study analyses. The other-ratings received for each administrator were averaged, providing 102 composite administrator ratings by others.

Design and Instrumentation

An ex post facto design was used for this study (Kerlinger, 1973). The survey instrument used in the study was the Multifactor Leadership Questionnaire (MLQ) Form 5X (Bass & Avolio, 1991). Two versions of the instrument were used: one for self-rating (MLQ-S) and one for other-ratings (MLQ-R). The MLQ anchors for leadership behaviors range from *not at all* (0) to *frequently, if not always* (4). The anchors for the outcome variable of effectiveness range from *not effective* (0) to *extremely effective* (4). Vocational administrators responded to the MLQ Form 5X-S and also provided additional personal information. Each administrator selected three vocational teachers to rate him or her by responding to the MLQ-R. Multiple raters' responses for each administrator were averaged to arrive at a composite rating for each administrator on each factor.

The MLQ measured leadership effectiveness and three leadership style constructs: transformational, transactional, and laissez faire. These three constructs are comprised of nine behavioral subscales. The study included the independent variables of gender, leadership styles (transformational, transactional, laissez faire), and position. Dependent variables were self-perceived leadership effectiveness and others-perceived leadership effectiveness.

Data Collection

Questionnaire packets were mailed to vocational administrators. The packets included a self-rating questionnaire and three questionnaires for others to complete, along with pre-addressed, stamped return envelopes for each questionnaire. One week after the initial mailing, a reminder postcard was mailed to each administrator. Three weeks after the initial mailing, a follow-up packet, which included the appropriate questionnaires still needing to be completed, along with pre-addressed, stamped return envelopes for each questionnaire, was mailed to each administrator who had not responded, or who had a teacher who had not responded. A total of 101 (75%) administrator self-ratings and 262 (65%) raters' responses were returned.

Analyses of Data

All analyses were conducted on responses from both the self-rating and the other-rating MLQ. The results reflect the primary research question of the relationship of gender and leadership style to perceived vocational administrator leadership effectiveness. Correlations, *t*-tests, and multiple regression analyses were used to identify, describe, and predict the relationships that exist between leadership style, gender, and position (the predictor variables) and perceived effectiveness (criterion variable).

Descriptive statistics and correlation analyses were used to answer the first research question. Analyses revealed, as shown in Table 1, that for both self-perception and others-perception of leadership behaviors vocational administrators rated themselves (M = 3.20, SD = 0.32) highest on the transformational leadership construct and other-ratings agreed (M = 3.01, SD = 0.49). The laissez faire construct rated lowest for both self- (M = 0.55, SD = 0.38) and other-ratings (M = 0.66, SD = 0.51).

Table 1
Means and Standard Deviations of MLQ Leadership Styles

	Self[a]		Others[b]		Difference
Styles	*M*	*(SD)*	*M*	*(SD)*	S - O[c]
Transformational	3.20	(0.32)	3.01	(0.49)	0.19
Transactional	1.46	(0.44)	1.45	(0.43)	0.01
Laissez faire	.55	(0.38)	0.66	(0.51)	-0.11

Note. Range of scores is not at all (0) to frequently, if not always (4).
[a]Self $N = 101$ ratings. [b]Other $N = 102$ composite ratings.
[c]S - O = M_{self} - M_{others}.

Correlations indicated the degree to which vocational administrators used perceived transformational, transactional, and laissez faire leadership behaviors. Correlation data revealed that transformational leadership subscales, as perceived by self and others, were significantly related to effectiveness. Transformational leadership was found to have a significant positive relationship with effectiveness in both self ($r = .48$) and other-ratings ($r = .82$) (see Tables 2 and 3).

Table 2
Correlations Between the Demographic Variables, Effectiveness, and MLQ Leadership Constructs from Self-Ratings

	Pos.	Gen.	Ethn.	Age	Years	LF	TF	TA	EFF
Pos.	--	.12	-.08	.09	-.07	-.03	-.05	-.23	-.12
Gen.		--	-.00	-.13	-.25*	-.04	.18	-.02	.24*
Ethn.			--	-.05	.00	.02	-.14	.22*	.13
Age				--	.66*	.00	.04	.02	.10
Years					--	.04	.19*	.22*	.13
LF						--	-.27*	.40*	-.14
TF							--	.04	.48*
TA								--	.04
EFF									--

Note. Pos. = Position, Gen. = Gender, Ethn. = Ethnicity, Age = Administrator Age, Years = Number of years as an administrator or supervisor, LF = Laissez Faire, TF = Transformational, TA = Transactional, EFF = Effectiveness
*$p \leq .05$.

Table 3
Correlations Between Administrator Demographic Variables, Effectiveness, and MLQ Composite Leadership Constructs from Other-Ratings

	Pos.	Gen.	Ethn.	Age	Years	LF	TF	TA	EFF
Pos.	--	.11	-.17	.10	-.07	-.16	.10	-.15	.10
Gen.		--	-.06	-.12	-.20*	.03	.04	.09	.00
Ethn.			--	-.16	-.04	-.23*	-.12	-.22*	-.08
Age				--	.65*	.10	.05	.16	-.02
Years					--	.07	.13	.25*	.17
LF						--	-.37*	.53*	-.35*
TF							--	.15	.82*
TA								--	.13
EFF									--

Note. Pos. = Position, Gen. = Gender, Ethn. = Ethnicity, Age = Administrator Age, Years = Number of years as an administrator or supervisor, LF = Laissez Faire, TF = Transformational, TA = Transactional, EFF = Effectiveness
*$p \leq .05$.

Management-by-exception-passive (MBEP) (r = -.33) and laissez faire (LF) (r = -.34) each show a significant negative correlation with effectiveness for other-ratings (see Table 4). As MBEP and LF increased, effectiveness decreased. The other-ratings indicated a significant positive relationship between the transactional factor of contingent reward and all five transformational factors. Other ratings showed significant, negative

Table 4
Correlations Among the Dependent Variable and the MLQ Leadership Factors for Other-Ratings

	AC	II	IL	IS	IC	CR	MBEA	MBEP	LF	EFF
AC	--	.82*	.87*	.75*	.84*	.33*	.02	-.46*	-.42*	.76*
II		--	.88*	.87*	.87*	.44*	.15	-.37*	-.32*	.75*
IL			--	.86*	.88*	.44*	.04	-.51*	-.43*	.79*
IS				--	.85*	.45*	.12	-.27*	-.24*	.75*
IC					--	.49*	.12	-.37*	-.32*	.78*
CR						--	.37*	.07	.09	.38*
MBEA							--	.37*	.36*	.09
MBEP								--	.84*	-.33*
LF									--	-.34*
EFF										--

Note. AC = Attributed Charisma, II = Idealized Influence, IL = Inspirational Leadership, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception-Active, MBEP = Management-by-Exception-Passive, LF = Laissez Faire, EFF = Effectiveness.

*$p \leq .05$.

relationships between MBEP and all five transformational factors. Thus, as transformational behaviors increased, MBEP decreased. Similarly, laissez faire has a significant, negative relationship with all five transformational factors as rated by others. However, other-ratings revealed a significant and positive relationship between laissez faire and management-by-exception-passive ($r = .84$) and -active ($r = .36$).

Intercorrelations between the nine leadership subscales were calculated and are shown in Table 5 for self-ratings. The transformational leadership subscale items had strong positive correlations with each other. Transactional leadership subscale items had positive correlations with each other.

Table 5
Correlations Among the Dependent Variable and the MLQ Leadership Factors for Self-Ratings

	AC	II	IL	IS	IC	CR	MBEA	MBEP	LF	EFF
AC	--	.60*	.52*	.42*	.61*	.12	.02	-.16	-.16	.24*
II		--	.75*	.54*	.62*	.22*	.21*	-.18	-.17	.32*
IL			--	.65*	.66*	.18	.08	-.42*	-.33*	.54*
IS				--	.51*	.23*	.13	-.37*	-.24*	.50*
IC					--	.10	.06	-.25*	-.21*	.36*
CR						--	.58*	.21*	.19	.18
MBEA							--	.29*	.20*	-.00
MBEP								--	.59*	-.14
LF									--	-.14
EFF										--

Note. AC = Attributed Charisma, II = Idealized Influence, IL = Inspirational Leadership, IS = Intellectual Stimulation, IC = Individualized Consideration, CR = Contingent Reward, MBEA = Management-by-Exception-Active, MBEP = Management-by-Exception-Passive, LF = Laissez Faire, EFF = Effectiveness.
*$p \leq .05$.

T-test analyses were conducted to answer research question two. One transformational leadership factor, intellectual stimulation, along with effectiveness were significantly different between male and female administrators ($df = 99$, $p \leq .05$) according to self-ratings. For other-ratings, no differences were revealed between male and female administrators.

Through regression analyses, research question three was answered. Using a stepwise procedure, regression analyses revealed that for self-rating data, transformational leadership and gender were significant contributors to the effectiveness variance. The other variables, transactional leadership, laissez faire, and position did not enter the analysis. The self-rating data revealed transformational leadership and gender as the best predictors of self-perceived effectiveness. The coefficient of determination was .2533;

that is, 25% of the variance could be explained by transformational leadership and gender as presented in Table 6

Table 6
Administrator Characteristics That Predict Self-Perceived Leader Effectiveness

Dependent Variable: Leader Effectiveness (self) Variables	Standardized Estimate	*T*-value*	*R*-Square Change
Gender	0.15	1.7	0.023
Transformational	0.45	5.1*	0.197
R-Squared = .2533			

Note. *$p \leq .05$.

Stepwise regression analysis was also used for other-ratings. Analysis revealed that transformational leadership was a predictor of others-perceived effectiveness (see Table 7). For others-perceived effectiveness, 66% of the variance could be explained by transformational leadership. Unlike the self-ratings, gender did not contribute to the prediction of perceived effectiveness.

Table 7
Administrator Characteristics That Predict Others-Perceived Leader Effectiveness

Dependent Variable: Leader Effectiveness (others) Variables	Standardized Estimate	*T*-value*	*R*-Square Change
Transformational	0.81	13.5	0.657
R-Squared = .6570			

Note. *$p \leq .05$.

Conclusions and Implications

In this study, the relationships between leadership, gender, and perceived leadership effectiveness were examined. Contemporary definitions of leadership reflect a multidimensional perspective (Finch & McGough, 1982). It is not just an individual's perception of him or herself as a leader, but also how others perceive him or her as a leader that is important. One dependent variable focused on self-perception and another dependent variable focused on others-perception of leadership. The study results confirm the multidimensional nature of leadership described by Finch and McGough (1982). While leading others through change, the multidimensional (self and others) perception of the administrator's perceived leader effectiveness is important to the success of efforts to reform and restructure education.

Transformational leadership was the predominant leadership style revealed in this study. This style was noted for both self-perception and the perception of others. The results of this study are similar to results reported by Kirby, Paradise, and King (1992) and Tucker, Bass, and Daniel (1992). They found transformational leadership to be the predominant form of leadership style for educational administrators. Tucker, Bass, and Daniel (1992) found that followers perceived transformational leaders as more effective than those who had other types of leadership styles. Kirby, Paradise, and King (1992) found significant correlations between transformational leadership factors and perceived effectiveness. In this research study, the correlations for self- and other-ratings showed significant and positive correlations between transformational composite ratings and effectiveness. The significant positive correlation was stronger in other-ratings.

Most research studies which employ the MLQ have focused on others-perceptions of immediate supervisors. Subordinates appear to give more consistent and valid ratings than those reflected by self-ratings (Clark & Clark, 1992). The findings of this study were consistent with other studies conducted in educational settings and using others-perceptions.

Like results reported by Fierman (1990) and Hill and Ragland (1995), this study found that females (78%) were more likely to be in staff positions than line positions. In this study, position did not have a significant correlation with effectiveness in either self (r = -.12) or other-ratings (r = -.10). The low negative correlation may have been due to the high number or percentage of administrators working in staff positions. These positions are often considered as more limiting (e.g., less contact with teachers and students, less involvement with specific school concerns and problems) than line positions. Of the administrators in this study, 70% held staff positions. Overall, administrators were considered to be effective; however, the nonsignificant relationship between effectiveness and position may have been affected by the distribution of positions.

Descriptive data analyses generated findings for research question two. Others-perceived effectiveness revealed no significant mean differences between male and female administrators. The mean rating was the same (3.05) for both male and female administrators. Hackman, Hills, Furniss, & Paterson (1992), Heller (1992), and Hill and Ragland (1995) found that both genders had effective leadership strengths. Hackman et al. (1992) specifically found that transformational leadership included characteristics considered both masculine and feminine and that effective leadership included both types of gender behaviors. This study's findings support the effective leadership findings reported by Hackman et al. (1992) which combined task-oriented and relations-oriented behaviors.

Self-ratings revealed significant differences according to gender in the transformational factor of intellectual stimulation and the organizational outcome of effectiveness. In terms of intellectual stimulation, females rated themselves higher than male administrators. Females also rated themselves higher on effectiveness.

Overall, females rated higher as transformational leaders than their male counterparts. Females rated higher on four of the five factors of the transformational leadership construct on both self- and other-ratings with a significant difference noted for intellectual stimulation in self-ratings. The NCRVE studies (Moss et al., 1994b) found that females were rated higher by others on leadership attributes (factors) using the Leader Attributes Inventory.

For the dependent variable, self-perceived effectiveness, a significant difference was detected between male and female vocational administrators. Females rated themselves higher than their male constituents rated themselves on effectiveness. Studies conducted by Moss et al. (1994a, 1994b) found a significant difference with female vocational administrators rated higher on effectiveness by others using the Leader Effectiveness Index.

The *t*-test results for other-ratings did not detect any significant differences between male and female ratings. As with self-ratings, the ratings for females were higher on four of the five transformational leadership factors.

The results of this study were similar to the findings of Eagly, Karau, and Makhijani (1995) who conducted a meta-analysis of leadership studies related to gender. They also found that women and men do not differ in leader effectiveness as rated by others. These findings support results of the Bettin et al. (1992) study that determined that the way a leader behaves and the relationship of the leader with the followers are the most important factors for determining effectiveness. Despite any barriers that women may have faced in reaching administrative positions, they seem to be succeeding and performing effectively.

The Hackman et al. (1992) study found that transformational leadership requires characteristics considered to be both masculine and feminine. They found that effective leadership included both gender type behaviors. They concluded that no one gender (sex) seems to have the advantage, but rather those individuals using a combination of characteristics traditionally considered either masculine or feminine are considered most effective.

Two stepwise regression analyses were performed with one focusing on self-ratings and another focusing on other-ratings. From the self-ratings, it was found that both gender and transformational leadership style could best predict perceived effectiveness. In other-ratings, only transformational leadership behaviors predict effectiveness. The Hater and Bass (1988) and Kirby, Paradise, and King (1992) studies, where only other-ratings were used, also found that transformational leadership was the best predictor of perceived effectiveness. This is an encouraging finding since it indicates that followers look to their administrator as a leader regardless of gender or the influence imparted by position. Tucker, Bass, and Daniel (1992) found that in higher education settings, transformational leadership was the predominant perceived style by subordinates. This study lends support to the notion that transformational leadership is also being practiced by secondary school level administrators in both staff and line positions.

The results of this study have particular relevance to persons at the local, state, and university educational levels who work with leadership development programs. The finding that others do not perceive a difference between male and female effectiveness supports the androgynous nature of the effective leader and the development of a diverse population of leaders. These findings provide a rationale for making decisions relative to program development and program content.

The research findings are also valuable to superintendents at the local or state level who work with vocational administrators. After a clearer understanding is established of effective leadership factors (attributes), these factors may be included in pre-service

leadership development programs for aspiring administrators. When conducting a self-analysis, an understanding of different styles of leadership helps aspiring administrators to begin modeling their behaviors in certain ways during their initial professional development.

Although common development elements could be established for all administrators, individualized development appears to offer the best opportunities for practicing vocational administrator improvement. In-service education opportunities offer continued professional development with an individual focus on improving behaviors linked to effective leadership. A matched comparison of each administrator's self-rating with the other-ratings focusing on the dyadic perspective would provide in-depth insight into an individual style of leadership. The individual profiles could be useful in creating an individualized leadership development plan. Through in-depth personal analysis, the particular aspects of leadership which need improvement or development could be determined and assets could be recognized.

As Bennis and Nanus (1985) stated, leaders can be developed. Thus, after each individual's leadership profile has been determined, specific steps may be taken to address the individual's needs. An assessment tool, like the MLQ, for diagnosing practicing administrators' leadership behaviors can serve as a useful starting point for organizing individualized leadership development experiences. The assessment results would benefit high level administrators who need to be more aware of transformational leadership and more sensitive in terms of administrator selection.

In the regression analysis, gender was not a consistent predictor of leadership effectiveness. There was instability in the prediction of effectiveness between self- and other-ratings. For future research, it might be of value to pursue this inconsistency qualitatively.

Based on previous studies, a significant difference between male and female vocational administrators in other-ratings of effectiveness was expected. Since this did not occur, a qualitative dimension of interviews with administrators and their constituents (followers) would add additional insight into perceptions of leadership behaviors and effectiveness. Through interviews with administrators and their followers, a more in-depth understanding could be gained about their perceptions of effective leaders and any differences that might surface based on gender. Likewise, the leader's perspective on interactions with followers could be examined more fully.

Transformational leadership was the style of leadership rated highest by both self- and other-ratings. While it was anticipated that, based on earlier studies, transformational leadership would rate highest, it was also expected that transactional leadership would be stronger. To confirm the validity of the ratings, transformational leadership of vocational administrators should be examined using multiple measures to determine if the results are consistent. Are the results received due to the particular instrument used, or are results consistent with multiple measures of transformational leadership and effectiveness?

References

Bass, B. M. (1985). Leadership and performance beyond expectations. New York: Free Press.

Bass, B. M. (1990). Bass & Stogdill's handbook of leadership: Theory, research, and managerial applications (3rd ed.). New York: Free Press.

Bass, B. M. & Avolio, B. J. (1990). Transformational leadership development: Manual for the multifactor leadership questionnaire. Palo Alto, CA: Consulting Psychologists Press.

Bass, B. M. & Avolio, B. J. (1991). Multifactor leadership questionnaire form 5X. Binghamton, NY: Center for Leadership Studies at State University of New York-Binghamton.

Bass, B. M. & Avolio, B. J. (1994). Improving organizational effectiveness through transformational leadership. Thousand Oaks, CA: Sage.

Bennis, W. & Nanus, B. (1985). Leaders: The strategies for taking charge. New York: Harper & Row.

Bettin, P. J., Hunt, P. S., Macaulay, J. L., & Murphy, S. E. (1992). Shido effective leadership in Japan. In Clark, K. E., Clark, M. B. & Campbell, D. P. (Eds.). Impact on leadership (pp. 81-94). Greensboro, NC: Center for Creative Leadership.

Boesel, D. & McFarland, L. (1994). National assessment of vocational education. Final report to Congress: Volume I summary and recommendations. Washington, DC: Office of Research, USDOE.

Burns, J. M. (1978). Leadership. New York: Harper & Row.

Clark, K. E. & Clark, M. B. (1992). Introduction. In Clark, K. E., Clark, M. B. & Campbell, D. P. (Eds.). Impact on leadership (pp. 1-10). Greensboro, NC: Center for Creative Leadership.

Downton, J. V. (1973). Rebel leadership: Commitment and charisma in the revolutionary process. NY: Free Press.

Eagly, A. H., Karau, S. J. & Makhijani, M. G. (1995). Gender and the effectiveness of leaders: A meta-analysis. Psychological Bulletin, 117(1), 125-145.

Fierman, J. (1990). Why women still don't hit the top. Fortune, 122(3), pp. 40-62.

Finch, C. R., Gregson, J. A., & Faulkner, S. L. (1991). Leadership behaviors of successful vocational education administrators. Journal of Vocational Education Research, 16(1), 1-35.

Finch, C. R. & McGough, R. L. (1982). Administrating and supervising occupational education. Englewood Cliffs, NJ: Prentice Hall.

Fullan, M. G. (1992). Visions that blind. Educational Leadership, 49(5), 19-20.

Hackman, M. Z., Hills, M. J., Furniss, A. H., & Paterson, T. J. (1992). Perceptions of gender-role characteristics and transformational and transactional leadership behaviours. Perceptual and Motor Skills, 75, 311-319.

Hater, J. J. & Bass, B. M. (1988). Superiors' evaluations and subordinates' perceptions of transformational and transactional leadership. Journal of Applied Psychology, 73(4), 695-702.

Heller, T. (1982). Women and men as leaders. NY: J. F. Bergin.

Hill, M. S. & Ragland, J. C. (1995). Women as educational leaders: Opening windows, pushing ceilings. Thousand Oaks, CA: Sage.

Kirby, P. C., Paradise, L. V. & King, M. I. (1992). Extraordinary leaders in education: Understanding transformational leadership. Journal of Educational Research, 85, 303-311.

Kerlinger, F. N. (1973). Foundations of behavioral research (2nd ed.). NY: Holt, Rinehart, & Winston.

McGrath, S. T. (1992). Here come the women! Educational Leadership, 49(5), 62-65).

Mitchell, D. E. & Tucker, S. (1992). Leadership as a way of thinking. Educational Leadership, 49(5), 30-35.

Morrison, A. M. (1992). The new leaders: Guidelines on leadership diversity in America. San Francisco: Jossey-Bass.

Moss, J., Jr., Finch, C. R., & Johansen, B. C. (1991). When is a vocational administrator effective as a leader? Journal of Industrial Teacher Education, 28(4), 7-21.

Moss, J., Jr., Lambrecht, J. J., Jensrud, Q., & Finch, C. R.(1994a). Leader attributes inventory manual (MDS-730). Berkeley, CA: National Center for Research in Vocational Education, University of California at Berkeley.

Moss, J., Jr., Lambrecht, J. J., Jensrud, Q., & Finch, C. R.(1994b). Leader effectiveness index manual (MDS-815). Berkeley, CA: National Center for Research in Vocational Education, University of California at Berkeley.

Rosenstock, L. (1991). The walls come down: The overdue reunification of vocational and academic education. Phi Delta Kappan, 72(6), 434-436.

Shakeshaft, C. (1987). Women in educational administration. Beverly Hills, CA: Sage.

Silins, H. C. (1992). Effective leadership for school reform. The Alberta Journal of Educational Research, 38(4), 317-334.

Tucker, M. L., Bass, B. M. & Daniel, Jr., L. G. (1992). Transformational leadership's impact on higher education: satisfaction, effectiveness, and extra effort. In Clark, K. E., Clark, M. B. & Campbell, D. P. (Eds.). Impact on leadership (pp. 169-176). Greensboro, NC: Center for Creative Leadership.

U.S. Congress. (1990). Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990. Public Law 101-392. Washington, DC: U.S. Government Printing Office.

Van Ebron, A. M. & Burke, W. W. (1992). The transformational/transactional leadership model: A study of critical components. In Clark, K. E., Clark, M. B. & Campbell, D. P.(Eds.). Impact on leadership (pp. 149-167). Greensboro, NC: Center for Creative Leadership.

Waldman, D. A., Bass, B. M., & Yammarino, F. J. (1990). Adding to contingent-reward behavior: The augmenting effect of charismatic learning. Group and Organizational Studies, 15(4), 381-394.

Wirt, J. G. (1991). A new federal law on vocational education: Will reform follow? Phi Delta Kappan, 72(6), 425-433.

Wirth, A. G. (1992). Education and work for the year 2000: Choices we face. San Francisco: Jossey-Bass.

Yukl, G. A. (1981). Leadership in organizations. Englewood Cliffs, NJ: Prentice-Hall.

Yukl, G. A. (1994). Leadership in organizations (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.

COPING BEHAVIORS AND TRANSITIONS OF MANAGERIAL MALES WHO EXPERIENCE MID-LIFE JOB LOSS

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Abstract

Job loss of mid-life managerial males is a phenomenon that is occurring more frequently as companies continue to streamline to reduce costs. This study is an exploration of the experience of job loss of selected mid-life managerial males as they coped with the stress of unemployment. The Ways of Coping Questionnaire was used to identify the coping styles following job loss. The Adult Career Concerns Inventory was used to identify career concerns of mid-life managerial males. A semi-structured interview was conducted to provide an in-depth description of job search and the job search process at mid-life.

Introduction

The psychological impact of job loss can be severe, especially for those individuals who entered the job market during the late 60's and early 70's. These individuals expected to join a company, work hard, and get promoted through a system that rewarded hard work and commitment, and retire after thirty plus years of service. When companies began to downsize and stream line management, these individuals were caught in a change they were unable to control and many lacked the skills needed to cope with the transition (Bennett, 1990). A number of studies have examined the complex psychological processes and vulnerability of individuals who are caught in a change, not of their own making (Bridges, 1980, 1991; DeFrank & Ivancevich, 1986; Fineman, 1983). Research on coping with involuntary job loss and its relationship to building a new career at mid-life is limited (Gordus, 1986). The focus of this study was the examination of how mid-life managerial males coped with job loss and how the coping styles influenced job search readiness and re-employment.

Purpose and Objectives

Coping is a crucial variable influencing the adaptational outcomes of a person's struggle to come to terms with job loss (Lazarus & DeLongis, 1983). The purpose of this study was to

investigate how mid-life managerial males coped with the stress of unemployment as they reestablished their careers and to obtain an in-depth description of how mid-life managerial males went about the process of re-establishing their careers. The study examined the career concerns mid-life managerial males cycled through in the re-establishment of career goals and to what extent did the subjects use the following coping styles - distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal. In addition, the study attempted to identify the factors that affected the outplacement experience of selected mid-life managerial males and the strategies the subjects used to re-establish career goals which confirmed coping styles and career concerns.

Procedures

The target population for this study were male middle managers between the ages of 36 and 56 who had lost their jobs due to corporate restructuring and downsizing. The Raleigh, NC offices of two outplacement firms, Right Associates and Drake, Beam, Morin, agreed to serve as sites for this study. During a three month period in 1995, fifteen outplacement candidates completed the *Ways of Coping Questionnaire* and the *Adult Career Concerns Inventory* during the assessment phase of the outplacement process. The candidates were given an overview of the study to read and were asked to sign a permission form stating that they were willing for the researcher to review the results of the two instruments and, if chosen, to participate in the audio-taped interview. Twelve of the candidates agreed to participate in the semi-structured interview and became the sample for this study. The participants ranged in age from 37 - 56. This age range is typical of the population most frequently receiving the services of outplacement counseling. All the men were Caucasian, two were single and ten were married.

The *Ways of Coping Questionnaire* (Folkman and Lazarus, 1988) was used to identify the coping processes and the *Adult Career Concerns Inventory* (Super, Thompson & Lindeman, 1988) was used to identify career concerns of the sample population. The *Ways of Coping Questionnaire* contains 66 items that describe a broad range of cognitive and behavioral strategies people use to manage internal and or external demands in specific stressful encounters. The participants were instructed to think about the recent job loss when responding to the questionnaire. The eight coping processes identified were: confrontive coping which describes aggressive means to change the situation and may suggest hostility and risk-taking; distancing which the describes the extent that an individual detaches from the situation in order to minimize the significance of the situation; self-controlling which describes the extent an individual regulates feelings and actions; seeking social support which defines the amount of informational, tangible, and emotional support an individual seeks; accepting responsibility which describes how much an individual acknowledges his/her own responsibility in the problem; escape-avoidance which describes the individual's attempts to avoid the problem; planful problem solving which involves deliberate problem-focused efforts to change the situation; and positive reappraisal which describes efforts to

maintain a positive outlook by focusing on personal growth and includes a religious dimension (Folkman & Lazarus, 1988). The *Adult Career Concerns Inventory* is a self-descriptive instrument that reveals the pattern of an individual's career concerns. The ACCI consists of 61 statements of career concerns and assesses the career concerns of exploration, establishment, maintenance, and disengagement.

The factors affecting the outplacement experience and the strategies and processes by which selected mid-life managerial males used to re-establish career goals were assessed through a semi-structured in-depth interview using questions developed to reflect adaptation to forced job change and adult career concerns. The questions were developed by the researcher based on an understanding of stress and coping theory, life/career development stage theory, and knowledge of the outplacement process. The interviews varied in length from one to two hours and were conducted privately at the respondent's convenience. The interviews were audio taped and were conducted after the subject had completed the marketing phase of the outplacement process and had begun an active job search campaign.

Analysis of Data

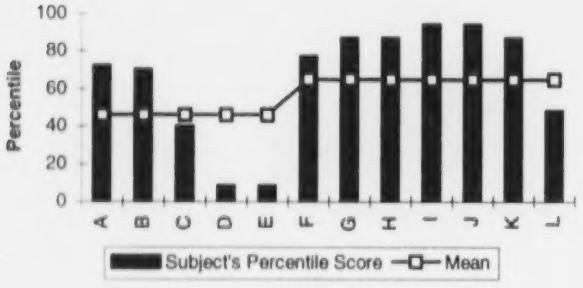
The career concerns and coping behaviors were identified through the *Adult Career Concerns Inventory* and the *Ways of Coping Questionnaire*. Verbatim transcription of recorded interviews was used to analyze the semi-structured interviews. The researcher read through the transcribed interviews several times and tagged relevant data by asking the question, "Which coping style or career concern does this data go with?". The researcher referred to the items on the *Ways of Coping Questionnaire* and definitions (Folkman & Lazarus, 1988)of each coping behavior to confirm coping behaviors. Nine factors emerged from the analysis of the semi-structured interviews that were consistent with each of the subjects of the study. These were: no advanced warning, early warning signs of termination, the termination interview, why, personal reaction, stress and coping, family and friends, perceptions of re-employment, and roadblocks.

Results

Adult Career Concerns Inventory

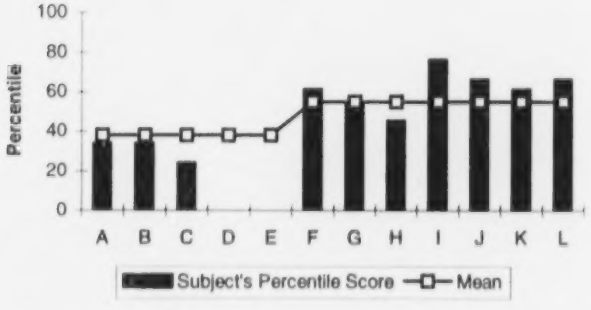
Scores on the *Adult Career Concerns Inventory* were represented in percentile norms that have been determined by age and gender. The mean percentile score for exploration for the 35-44 age group was 46 and for the 45+ group was 65. Eight subjects scored above the norm for exploration, one was about average, one was below average, and two were substantially below the norm. (See Figure 1)

Figure 1. Percentile Scores for Exploration



The mean percentile for establishment for the 35-44 age group was 38 and for the 45+ group was 55. Five of the subjects scored above the norm for establishment, three scored at or near the norm, two scored below the norm, two scored substantially below the norm. (See Figure 2)

Figure 2. Percentile Scores for Establishment



The mean percentile score for maintenance for the 35-44 age group was 52 and for the 45+ age group was 50. Two of the subjects had scores above the norm, five of the subjects had average scores, two subjects were below the norm, and three subjects were substantially below the norm. (See Figure 3)

The mean percentile for disengagement for the 35-44 age group was 52. The mean percentile for the 45+ age group was 47. Five subjects scored above the norm, two scored at the norm, one subject scored below the norm, and four subjects scored substantially below the norm for disengagement. (See Figure 4)

Figure 3. Percentile Scores for Maintenance

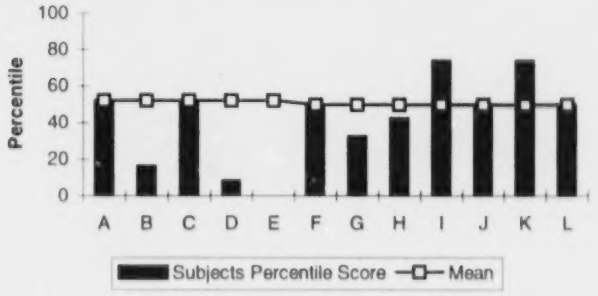
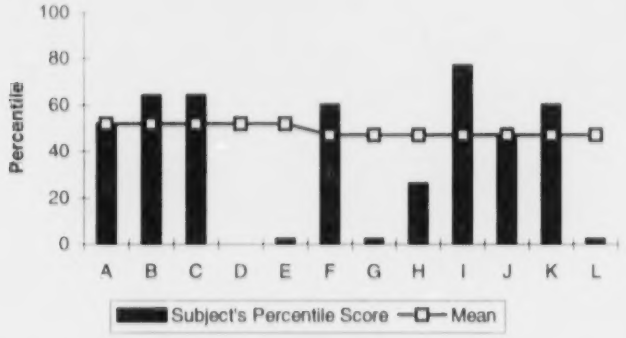


Figure 4. Disengagement



Ways of Coping Questionnaire

The results of the *Ways of Coping Questionnaire* for the twelve participants were reported as relative scores. The researcher calculated the relative score for each coping behavior to describe the contribution of each coping score relative to all of the scales combined. The relative score for each scale was computed by (a) calculating the average item score of the items on a given scale by dividing the total raw score by the number of items in the scale, (b) calculating the sum of the average item scores across all eight scales, and [c] dividing the average item score for a given scale by the sum of the average item scores across all eight scales. This method controls for the unequal numbers of items within scales, for individual differences in responses rates and reveals relationships between the coping behaviors (Folkman & Lazarus, 1988). Positive reappraisal, self-controlling, seeking social support, and planful problem solving were used more often than distancing, escape-avoidance, confrontive coping, and accepting responsibility. Table 1 displays the subject's relative scores for the *Ways of Coping Questionnaire*.

Table 1. Subject's Relative Scores for the *Ways of Coping Questionnaire*

Subject	PPS	SC	SSS	PR	D	CC	AR	EA
A	20	11	20	21	7	9	10	2
B	15	20	18	20	7	6	7	6
C	11	10	25	22	14	6	8	4
D	24	12	20	16	10	12	3	3
E	9	38	18	20	5	3	4	2
F	24	16	17	14	9	5	8	7
G	7.5	30	25	6	15	10	0	6
H	19	17	13	31	11	4	0	5
I	11.5	20	14	18	12	4.5	10	10
J	13	11	17.5	25	10	1.5	12	10
K	20	15	16	19	8	14	3	6
L	29	6	27	17	9	6.5	0	5
Total	203	206	230.5	229	117	81.5	65	66

PPS - Planful Problem Solving
SC - Self-controlling
SSS - Seeking Social Support
PR - Positive Reappraisal
D - Distancing
CC - Confrontive Coping
AR - Accepting Responsibility
EA - Escape-avoidance

Themes Consistent with the Outplacement Experience

The nine themes identified that were consistent with outplacement experience of the subjects of this study were: no advance warning, early warning signs of termination, the termination interview, why, personal reaction, stress and coping, family and friends, perceptions of re-employment, and roadblocks.

Five of the subjects had no advance warning of the termination. These subjects talked about how sudden it was, the fact that they had no clue and they did not notice anything unusual going on that indicated their position might be eliminated. Seven of the subjects described early warning signs that led them to believe that their jobs were in jeopardy. Problems with management, the company being sold, change in senior management, the organization experiencing a drop in profits, and re-engineering of the workforce were all cited as early warning signs.

The termination interview was mentioned by ten of the twelve subjects. These individuals discussed what was said, who was present, and how they felt during the termination

interview. The emotions ranged from disbelief to relief. Those subjects who had advanced warning felt relief, those subjects who did not know felt shock. Words the subjects used described their reaction to the termination were: confused, relieved, like a death in the family, blindsided, disbelief, scary, stressful, hurt, angry, painful, numb, and mixed emotions.

The subjects needed to know why their jobs had been eliminated. Six of the subjects wanted to know why, what was wrong, what they could have done to prevent it from happening, and why they had not been informed that things were not going well. These subjects were disappointed that they did not get a justifiable reason for their termination.

The subjects experienced stress and coping to the job loss in different ways. One subject felt stress when he wasn't able to put the hours into the job search he wanted. Several subjects discussed the termination interview as being the most stressful part of the process. Family issues created stress for three of the subjects. Two subjects had a difficult time dealing with being out of work from the standpoint that they had always worked and work had been the primary focus of their life. They were financially secure and had the luxury of taking their time to find a suitable position, yet they found it difficult to adjust to being out of work.

As a group, these subjects of this study were optimistic about their ability to find work that was suitable for their background and experience. A positive attitude seemed to be the key factor for moving to a new beginning. Three subjects discussed the need to take some time off initially to regroup and several subjects mentioned the importance of exercise and taking breaks from the job search process to regroup.

Family support was an important factor mentioned by the subjects as they dealt with job loss. Nine of the ten married subjects discussed how important it was that the spouse was available after a particularly bad or good day. Spouses were often asked to be sounding boards for ideas about the job search. Only one married subject had a non-supportive spouse. He discussed how difficult this was and how his adult children supported him by talking with his wife to get her to understand the situation.

The subjects discussed their perceptions of re-employment and emphasized the length of time the process took. They were positive in their belief that they would be able to find suitable employment, but knew it would take a time and a lot of hard work. Age was discussed by only one subject as being a factor in finding employment quickly. Several subjects were excited about uncovering new opportunities and felt the challenge would be finding the right situation.

Each subject talked about roadblocks he faced in the job search. These included not having an established professional network, trying to sell a particular set of skills, calling people to set up information/referral meetings, staying motivated, age, the negative attitude of a spouse, industry trends, and geographic location.

Strategies and processes which confirm coping behaviors and career concerns

A review of the transcribed data from the semi-structured interviews revealed that the sample population exhibited career concerns of exploration and the coping style of planful problem solving in the re-establishment of their career goals. The subjects were actively involved in researching the job market, identifying the opportunity that would be the best fit for background and skills, and were focused in the job search. Each subject had developed a plan of action and followed the plan.

Conclusions and/or Recommendations

Much of the information gathered in this study confirmed research on coping behaviors and adult career concerns. The career concerns of the participants of this study, reflected in the above the norm scores of eight participants and bimodal and multimodal profiles of five participants on the *Adult Career Concerns Inventory*, are in agreement with Super's premise that vocational needs change as circumstances change (Super & Kidd, 1979). Career transition at mid-life creates an opportunity to explore new options. In addition, assessing skills, interests, and values before beginning a job search was identified by the subjects as a crucial step in being adequately prepared for the job search process. As indicated by the responses to the semi-structured interview questions, exploration was the predominant career concern of the participants of this study.

Coping behaviors of recently terminated mid-life managerial males revealed that there was no right or wrong way to cope with job loss. Each coping behavior was important in the way it reduced the stress around the termination event and re-employment process with the predominate coping behaviors of planful problem solving, positive reappraisal, self-controlling, and seeking social support. Significant findings included the similarities between stories of each subject in the nine areas identified from the transcribed interviews. During job loss, stressors are constantly changing due to the changing momentum of the job search itself. An interesting finding was the level of positive self-esteem these subjects had in terms of their feelings of becoming re-employed in a chosen career field. On the whole, this group was upbeat and challenged to find a new position and felt optimistic that they would quickly land a new position.

In conclusion, mid-life managerial males who were rebuilding their careers after job loss recycled through the career development stages with particular emphasis on exploration. In addition, all eight coping behaviors were used to manage the stress with planful problem solving, seeking social support, positive reappraisal, and self-controlling being used more often than distancing, confrontive coping, accepting responsibility, and escape-avoidance. Planful problem solving was the coping behavior most often identified in relation to the job search process.

Recommendations

Career counselors, outplacement consultants and other professionals who work with the recently terminated employee are in a position to provide much needed guidance and support for the job search process. As exploration was identified as the primary career concern, counselors need to provide a forum for assessment and exploration of new opportunities. Some of the subjects discussed the termination interview as if it had just happened, still wanting to know why and wanting a reason that they could accept. Counselors can help the recently outplaced individual move forward by allowing time to debrief and verbalize the termination event in order to bring closure and develop a rationale that is acceptable. Also, strengthening skills in planful problem solving, positive reappraisal, self-controlling, and seeking social support were indicated in this study to increase an individual's change for a positive outcome of the job search process.

New information that would be helpful for professionals who work with this population include: the length of time a job search takes, the time and effort it takes to do research and hold the information/referral meetings, and the ongoing need for support from family and friends. The information/referral meeting was described as one of the most difficult tasks, yet one of the most critical for finding a suitable position. Professionals need to place particular emphasis on coaching the recently unemployed to develop the skills to successfully manage information/referral meetings.

This study focused on a particular stage in the job search process. A longitudinal study that would follow the job search experience of individuals as they enter the outplacement process until they land a new position would enhance these findings. As most job searches for individuals at this level take from three to nine months, a longitudinal study would be helpful in identifying successful coping strategies of a prolonged job search.

References

Bennett, A. (1990). The death of the organization man. New York: William Morrow and Company, Inc.

Bridges, W. (1980). Transitions. Reading, Mass: Addison-Wesley Publishing Company.

Bridges, W. (1991). Managing Transitions. Reading, Mass: Addison-Wesley Publishing Company.

DeFrank, R. & Ivancevich, J. (1986). Job loss: an individual level and review model. Journal of Vocational Behavior, 28, (1), 1-20.

Fineman, S. (1983). White collar unemployment, impact and stress. New York: John Wiley & Sons. Folkman S. & Lazarus, R. (1988). Ways of coping questionnaire manual. Palo Alto, CA: Consulting Psychologists Press.

Gordus, J. (1986). Coping with involuntary job loss and building a new career: workers' problems and career professionals' challenges. Journal of Career Development, 12, (4), 316-326.

Lazarus, R. & DeLongis, A. (1983). Psychological stress and coping in aging. American Psychologist, 40, 245-254.

Super, D., Thompson, A., & Lindeman, R. (1988). Adult career concerns inventory: Manual for research and exploratory use in counseling. Palo Alto, CA: Consulting Psychologists Press.

Super, D. & Kidd, J. (1979). Vocational maturity in adulthood: Toward turning a model into a measure. Journal of Vocational Behavior, 14, (3), 255-270.

ASSESSMENT OF JUNIOR HIGH/MIDDLE SCHOOL AGRICULTURAL EDUCATION PROGRAMS IN NEBRASKA

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Abstract

The purpose of the study was to identify, describe and assess the junior high/middle school agricultural education programs in Nebraska. Seventy-three programs reported having a junior high/middle school agricultural education program. Most of the programs had been in existence 10 years or less. A clear majority of respondents had nine week programs. Over half of the respondents that did not have junior high/middle school programs wanted to add the program, but the "school class schedule" was the most frequently identified deterrent. Those instructors not interested in adding a program cited a "full instructor schedule" as their major deterrent. For those who offered junior high/middle school programs, the most frequently cited opportunities for offering the program were to "promote agriculture awareness," "recruitment for agriculture classes," and "exposure to career opportunities in agriculture".

Introduction

Why should we expand agricultural education into our junior high/middle schools? There are several reasons to teach agricultural education to adolescents including: the issues of agricultural literacy; exploration of agricultural career interests; and utilizing experiential learning theory during adolescence.

Currently 97% of the U.S. citizens do not live on a farm or are not engaged in production agriculture. Obviously, food and food production are basic to human welfare and have played a major role in our history and the development of our culture (National Research Council, 1988). This development, however, has resulted in more policy makers and

consumers having less knowledge of agriculture and its contributions to our society and economy than any time in our nation's history. Because of current and future issues related to agricultural policy, it will become important for those 97% of the U.S. citizens who do not live on a farm or are not engaged in production agriculture to be literate in agriculture (National Research Council, 1988). To address this issue, the *Pilot Study of Agricultural Literacy, Executive Summary* (December 1993) recommended that elementary and secondary schools integrate instruction about agriculture throughout the curriculum.

Beyond agriculture literacy is the issue of career interests in agriculture. During early adolescence, students are formulating career interests and goals (Barrick & Hughes, 1993). Psychologically, adolescent learners seek a positive self-concept and a high level of self-esteem. These learners experiment with a variety of roles and personalities in an attempt to identify who they are. The exploration of possible vocational roles supplements the development of adolescent social roles and together this development manifests itself in a more complete development of the adolescent's identity. Providing early introduction to agriculture careers during these years allows for career exploration. For the adolescent, it moves the process of career exploration from the abstract to the concrete, congruent with the learning pattern of the adolescent (Miller, 1988; Fritz & Bell, 1993).

Purpose and Objectives

The purpose of the study was to identify, describe and assess the junior high/middle school agricultural education programs in Nebraska. The results were used to plan, implement and inservice junior high/middle school agricultural education curriculum. The specific objectives of the study were to determine:

1. the extent and description of junior high/middle school agricultural education offerings in Nebraska;
2. deterrents to adding a junior high/middle school component to local agricultural education programs;
3. the major local opportunities offered by a junior high/middle school agricultural education component; and
4. major frustrations of teaching a junior high/middle school agricultural education component.

Research Methods and Procedures

The design of the study was a descriptive survey. The population of the study was the 126 agricultural education instructors in Nebraska. The Agricultural Education Division of the Nebraska State Department of Education provided the official roster of agricultural education programs and instructors.

The questionnaire used for the study was designed by the researchers. Content validity of the instrument was determined by a panel of experts which included State Department of Education personnel, agricultural education faculty, agricultural education instructors, and an agricultural education student instructor.

A questionnaire packet (with a stamped, self-addressed envelope) was mailed to the 126 instructors in the Spring of 1994. Second and third follow-up mailings were made two weeks and four weeks after the initial mailing. This process yielded 118 completed questionnaires or a return rate of 94%.

Results

Objective 1. Seventy-three (or 62%) of the 118 programs reported having a junior high/middle school agricultural education program, 45 (38%) did not. When asked the number of years the school had a junior high/middle school agricultural education program, the majority of the responses were "under 10 years." One instructor reported his school had a junior high/middle school component for 52 years.

When queried about the length of time students spent in the junior high/middle school component, the clear majority (39 of the 73) of respondents said they had nine week programs, 20 respondents had 18 week programs.

Eight respondents said there was no mandatory student participation, two schools said there was mandatory participation in the first year (7th grade), and elective participation in the second year (8th grade). Sixty-one respondents said there was mandatory participation with no qualification, two did not respond. Instructors representing two of the 73 programs indicated participation was segregated by gender (restricted to all female/all male junior high/middle school classes).

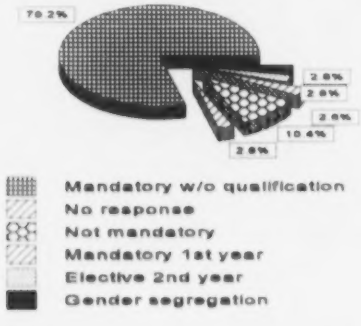

Figure 1. Status of Student Participation in Junior High/Middle School Agricultural Education Programs.

Objective 2. Forty-five respondents did not have a junior high/middle school agricultural education component in their program, but 25 of these respondents (56%) were interested in adding a component. The deterrent most frequently identified by agricultural education instructors who wanted to add a junior high/middle school component was "school class schedule," followed by "full instructor schedule" and "administration." For agricultural education instructors who did not want to add junior high/middle school components, the most frequently cited deterrents were "full instructor schedule," "school class schedule," and "location of junior high/middle school facility."

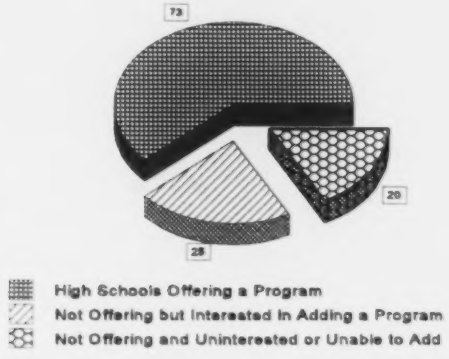
73
20
28
High Schools Offering a Program
Not Offering but Interested in Adding a Program
Not Offering and Uninterested or Unable to Add

Figure 2. Future of Junior High/Middle School Agricultural Education Programs.

Objective 3. When asked to identify the major opportunities offered by having a junior high/middle school agricultural education component, instructors most frequently said to "promote agriculture awareness"--33, followed by "recruitment for agriculture classes " --23, "exposure to career opportunities in agriculture"--22, and "introduce FFA to students"--19.

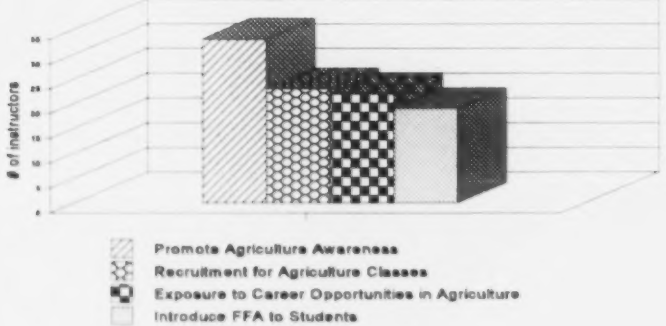
# of instructors
Promote Agriculture Awareness
Recruitment for Agriculture Classes
Exposure to Career Opportunities in Agriculture
Introduce FFA to Students

Figure 3. Opportunities associated with a Junior High/Middle School Agricultural Education Program.

Objective 4. The major frustrations of conducting a junior high/middle school agricultural education program were identified by instructors as lack of "resources and curriculum"--20, "levels of student interest and ability"--19, "instructor class load and time"--16, "inadequate class length"--15, and "lack of junior FFA competition and related opportunities"--11.

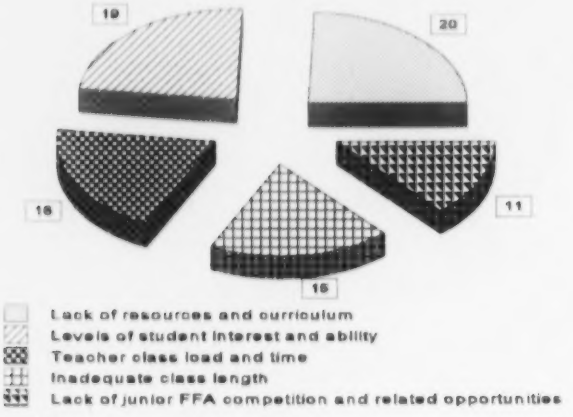

Figure 4. Major Frustrations Experienced by Instructors of Junior High/Middle School Agricultural Education Programs.

Conclusions and Recommendations

Over the last ten years there has been a tremendous growth in the number of junior high/middle school agricultural education programs in Nebraska, this mirrors the increase in the number of other career-oriented education programs at the middle-grade level in recent years (Barrick & Hughes, 1993). This growth brings up several critical questions for post-secondary agricultural education. Are our future instructors being prepared in the psychology of the adolescent learner? Have instructors in the field who are offering these programs or looking to offer them been given inservice on the psychology of the adolescent learner?

It is unlikely every student that passes through an exploratory program will pursue an agriculture career. Regardless of career intent, students as future policy and decision makers need to have a working knowledge of the important role of agriculture in our society. Nebraska instructors see the primary opportunity associated with offering agricultural education at the junior high/middle school level as creating agriculture awareness. This opportunity addresses the challenge identified by the National Research Council (1988) and the *Pilot Study of Agricultural Literacy, Executive Summary* (December 1993).

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Given that the majority of agricultural education programs in Nebraska are offering these programs, do instructors have adequate exploratory agricultural education curriculum? Adequate curriculum would move the learner from the abstract to the concrete in an highly experiential mode (McEwin & Thomason, 1989). Adequate curriculum would also be backstopped with current career paths related to agricultural concepts presented.

Class scheduling and a full instructor schedule were problems expressed by both those instructors interested in adding a junior high/middle school exploratory class and those not interested. Instructors in the field, as well as faculty who teach in post-secondary agricultural education programs, should emphasize the needs of the secondary agricultural education program in relationship to local, industrial, and national trends (National Research Council, 1988). In order to address these concerns, a greater emphasis by instructors in the field should be placed upon the importance of administrator relations, working within the local educational system and program planning. At the post-secondary agricultural education level, program planning should be broadened to include junior high/middle school as well as reinforce the determination of program needs, market analysis, and administrator relationships.

References

Barrick, R. K. & Hughes, M. Perceptions of State Vocational Education Administrators Relevant to Agricultural Education in the middle grades. Proceedings of the Central Regional Research Conference in Agricultural Education, March, 1993. St. Louis, MO.

Birkenholz, R.J. (December, 1993). *Pilot Study of Agricultural Literacy - Final Report*. U.S. Department of Agriculture, Cooperative States Research Service, Washington D.C.

Carnegie Council on Adolescent Development. (1989). *Turning points: Preparing American youth for the 21st century*. New York: Carnegie Corporation.

Fritz, S.M. & Bell, L. C. Methodological triangulation: Agricultural education enrollment and the non-traditional student. Proceedings of the Central Regional Research Conference in Agricultural Education, March, 1993. St. Louis, MO.

Miller, M. J. (1988). Career counseling for the middle grade youngster: Grades 6-9. *Journal of Employment Counseling*, 25(4), 172-179.

National Research Council, Board on Agriculture Committee on Agricultural Education in Secondary Education. (1988). *Understanding Agriculture: New Directions for Education*. Washington D.C.: National Academy Press.

VOCATIONAL TEACHER PREPARATION IN NORTH CAROLINA FOR INTEGRATION OF ACADEMIC AND VOCATIONAL EDUCATION

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Abstract

The purpose of this study was to describe the status of vocational teacher education in North Carolina related to integration of academic and vocational education. Vocational teacher education program coordinators and vocational student teachers were asked to identify the courses in which students received information on integration of academic and vocational education and the models for integration activities that were taught to students. While the results showed that vocational teacher education programs included some information on integration of academic and vocational education, student teachers and vocational teacher educators rated the level of prepartion of students in this area as "Fair."

Introducation and Theoretical Framework

Changes in technology demand students that can think critically, solve problems, and apply information learned in one context to a new situation. Vocational educators have recognized the need to emphasize the academic areas of communication, science, and mathematics that have traditionally been imbedded in vocational education curricula. Farmer (1993) highlighted the demand for high quality workers that will, in turn, demand high-tech teachers. Brock (1992) also pointed out the need for a high-productivity work force that possesses a solid basic education as well as technical skills. He went on to state

that all students, college bound or not, need preparation in eight areas of foundation skills to be successful. These skills included: basic skills, thinking skills, personal qualities, resources, interpersonal skills, information, technology, and systems knowledge. The primary purpose of the of the 1990 reauthorization of the Carl Perkins Vocational and Applied Technology Act was to "make the United States more competitive in the world economy by developing more fully the academic and occupational skill of all segments of the population" (American Vocational Association, 1990, p. 17). Business and industry leaders have repeatedly stated that they need workers that can read appropriate manuals, effectively communicate both, orally and verbally, and make decisions (Bottoms, Presson, and Johnson 1992).

Vocational and academic integration is occurring as teachers, administrators, and teacher educators pursue new strategies to improve secondary education (Roegge, 1994). The integration of academic and vocational education has been a priority for vocational and technical education in North Carolina in recent years. In fact, one of the principal components of tech prep programs includes integration of academic and vocational education. With the current focus on strategies such as "writing-to-learn" and integrated curriculum it is apparent that meshing the vocational subjects with the academic subjects is a logical step. Future vocational teachers will have to integrate math, science, English, and other academic subjects into their curricula to prepare their students for employment and higher education.

Vocational education emphasizes the application of academic concepts and principles. Newman and Johnson (1994) found needs for pilot agriscience courses to include instruction in computers, biotechnology, the environment, and application of the scientific method. Many educational leaders have come to realize in recent years that application of concepts and principles promotes learning among all students, not just those students enrolled in vocational education curricula. Therefore, integration of academic and vocational education is not just a vocational education concept. It benefits all students in a school because application of academic information promotes student learning. Gregson (1993) pointed out that the integration of vocational and academic education made learning more meaningful and relevant to all students, regardless of their academic aspirations. Students learn better when they can see the application and need for what they are studying.

There are many possible reasons for some teachers not being comfortable with integration of academic and vocational education. Some of those may be a lack of confidence to teach a certain subject area, lack of preservice training in the philosophy of implementation of integrating academic and vocational education, and a less than enthusiastic attitude by other teachers and administrators (Bottoms, Presson, and Johnson 1992; Grubb et al., 1991). Future efforts must be focused on improving the preparation of new teachers to implement the integration of academic and vocational education. Farmer (1993) stressed the demand for high quality teachers that are capable of teaching

the high-tech subjects of the future. He pointed out the need for all teachers, both academic and vocational to be involved with tech prep and the integration of academic and vocational education. Bouthyette (1992) discussed the positive attributes of combining horticulture, general science, and liberal arts. He stated, "the role of educators includes showing students how science permeates every aspect of their lives and why they need to understand science and integrate that understanding into their everyday lives" (p. 143).

There are several models for accomplishing the integration of academic and vocational education. Stasz, Kaganoff, and Eden, (1994) provided eight examples of models from Grubb et al., (1991) that applied to integrating academic subjects at the secondary school level. These models focused on cooperative teaching, incorporating more academics into vocational subjects, and orienting academic subjects towards vocational applications. The models also stressed curricular alignment to modify both vocational and academic courses, more assigned projects, magnet and occupational schools, and placing students into career paths and occupational or vocational majors. There were many positive outcomes associated with implementation of these models and some were more successful than others. One of the positive outcomes noted from these models which was reported by Bottoms, Presson, and Johnson (1992) was changes in school structure to facilitate academic and vocational education (Grubb et al., 1991). Stasz, Kaganoff, and Eden also pointed out that, while these positive outcomes indicated that integration of vocational and academic education was a good idea, there has been very little substantiated, empirical data to report. The few negative outcomes associated with integration were primarily associated with teachers having insufficient time to prepare for teaching additional subject matter, teachers having to deal with students of different skill levels and low achieving students, and teachers having to incorporate two major content areas into their schedules (Stasz, Kaganoff, and Eden, 1994).

The overall success of these efforts depended greatly upon the local and state school systems' abilities to support and implement the integration of academic and vocational education. It was pointed out that in some cases vocational teachers are perceived as not possessing the necessary skills to teach some of the academic skills that will be required of them. Another major problem facing integration is the lack of staff and curriculum development. Research has shown that most schools do not provide proper staff development for the successful integration of academic and vocational subject integration (Grubb et al., 1991, Stasz, Kaganoff, and Eden, 1994). Focusing on inservice activities is appropriate for the initial implementation of new programs, but future research and effort should be geared towards improving teacher education for academic and vocational teachers. While some core courses in teacher preparation curricula are completed by all preservice teachers, specific courses within the content area differ significantly, depending upon the student's major. Garner-Gilcrist (1993) emphasized the need for teachers to be taught to solve real problems as part of their teacher education programs.

Vocational and academic teachers are prepared differently, and in most cases this is also true within the various specialties within the two groups. The benefits of integrating academic and vocational education are becoming more apparent, and future teachers will have to deal with integration of subjects and the demands of cooperative teaching on a daily basis. The research clearly shows that more study needs to be done in this area and that one of the major areas to be examined is that of teacher education as it applies to the integration of academic and vocational education (Stasz, Kaganoff, and Eden, 1994).

While North Carolina has been active in implementing the integration of academic and vocational education, the majority of the effort in the area of training current teachers to accomplish this objective. Little has been done to study the impact of the role that preservice teacher education has played in implementing integration of academic and vocational education. The results of this study may be utilized by the colleges and universities in North Carolina with preservice programs in vocational teacher education to assess their progress in preparing teachers to meet this competency.

The research shows that teacher education programs can influence adoption of new educational initiatives. Weber (1993) addressed many of the major trends that have taken place in teacher education with regard to classroom management and found that all of the changes improved teachers as classroom managers. This shows that teacher education impacts classroom performance. Tierney and McKibbin (1993) studied strengths and weaknesses in California teacher education programs and found that one of the problems was faculty inability to adapt to the rapid changes taking place in secondary schools. This appears to be one of the problems associated with the implementation of academic and vocational education. An additional factor appears to be the fact that integration of vocational and academic education is still a relatively new initiative, and there has not been sufficient time or opportunity to evaluate the effectiveness of teacher education programs in preparing teachers in this area. The majority of the current literature has focused on implementing change for integration of academic and vocational education at the secondary level.

While inservice activities on the topic of integration of academic and vocational education have been conducted for current vocational and technical education teachers, it is important that the next generation of vocational teachers enter the profession with an understanding of the principles and concepts related to this topic. This eliminates the continued need for major inservice activities on the topic in the future. If vocational education wishes to lead in the educational reform movement, vocational teacher education programs should prepare graduates for successful implementation of integration of academic and vocational education. However, concern has been expressed about the level of knowledge of recent vocational teacher education graduates related to integration of academic and vocational education (Grubb, Davis, Lum, Plihal, & Morgaine, 1991).

Purpose and Objectives

The primary purpose of this study was to describe the current status of vocational teacher education in North Carolina as it relates to integration of academic and vocational education. A secondary purpose of the study was to identify the courses in which integration of academic and vocational education is being taught. Types of activities conducted by teacher education students related to integration of academic and vocational education will also be identified. Specifically, the following research questions provided a focus for the study:

1. What information is included in North Carolina vocational teacher education curricula related to the integration of academic and vocational education?

2. In which types of professional educational courses are integration of academic and vocational topics included?

3. What activities related to integration of academic and vocational education are included in North Carolina teacher education curricula?

4. What perceptions do vocational teacher educators and vocational student teachers have about their undergraduate teacher education program with regard to accomplishing the integration of academic and vocational education?

Methods and Procedures

This study was descriptive in nature and used survey research methodology. Data were collected from student teachers, teacher educators, and written course materials in an effort to triangulate, or confirm, the data from the perspective of all parties involved to define the current status of teacher preparation as it relates to the integration of academic and vocational education. The first population consisted of all student teachers enrolled in North Carolina vocational teacher education programs during the 1995 Spring Semester ($\underline{N}$ = 62). The second population was made up of the teacher educators responsible for each of the vocational teacher education programs in North Carolina colleges and universities. The teacher educators represented all vocational teacher education programs identified in the "1994 Directory of North Carolina Vocational and Technical Education Administrative and Teacher Personnel" distributed by the North Carolina Department of Public Instruction. Faculty responsible for each vocational program area at the universities and colleges listed in the directory were contacted and requested to provide information to support this initiative. A total of 14 institutions and 25 teacher educators were included in this study.

A faculty member in each vocational teacher education program was contacted by letter and asked to provide a list of their current (Spring 1995) student teachers and the name of the school to which they were assigned during the 1995 spring semester. Home addresses of student teachers were not requested or utilized due to the Privacy Act of 1974. Student teachers were selected because they would have completed the entire sequence of professional education courses at their college or university. If a university or college had more than one vocational teacher education program, a faculty member from each vocational program was contacted. Lists of student teachers were received from 13 of the 14 colleges and universities. Some faculty returned the list stating they had no student teachers during the Spring 1995 Semester. In all, 62 student teachers were identified. The lack of home addresses for student teachers combined with the end of the academic school year prevented follow-up procedures for the student teacher participants. In both populations all of those identified were surveyed.

A survey instrument was developed to collect the data for this study. The wording and instructions were slightly modified for the teacher educators. A review of the literature was the primary source for the items on the instrument. Content validity was established by a panel of experts from vocational educators at North Carolina State University and The North Carolina State Department of Public Instruction. Instrument reliability was established by a test/re-test procedure with 13 of the 35 student teacher respondents. Results indicated that the instrument was stable over time.

Part one of the questionnaires consisted of six items which identified to what extent different approaches to integration of academic and vocational education were included in the undergraduate teacher preparation program. The second part of the questionnaire asked the respondents to identify types of courses that included content or assignments that related to the integration activities listed in part one. The final item on the questionnaire asked the respondents to circle the choice that best represented their opinion of their preparation in their undergraduate teacher education program for accomplishing the integration of academic and vocational education.

Teacher educators from 13 of the 14 institutions (92.8%) responded to the survey. Eleven of the twenty-five teacher educators responded to the initial letter and returned the questionnaire. A follow-up letter resulted in an additional four responses, for a total of 60% return. The late responses were attributed to time constraints brought on by the end of the academic year. Nonresponse error was controlled by comparing (t-test) early and late respondents on the major variables. No statistical differences were found, so the data were assumed to be representative of the population (Miller and Smith, 1983).

Packets including a questionnaire, a cover letter explaining the purpose of the study, and a self-addressed stamped envelope were mailed to student teachers in mid-April. Thirty-five of the 62 student teachers (56.5%) responded. Additional follow-up was not possible due to the end of the school year.

Data were summarized utilizing measures of central tendency, measures of variance, and frequencies and percentages. Because items on the instrument were mutually exclusive and were not assumed to be correlated, data were presented for individual items related to the research questions. Since the data represented the entire population, population parameters rather than inferential statistics were reported.

Results

Vocational education students teachers and teacher educators were asked to identify to what extent topics relating to the integration had been included in their teacher education preparation program. Respondents were asked to circle one response for each item. A four point Likert-type scale provided the response choices as follows: 1 = Not Included, 2 = Very Little Information, 3 = Some Information, and 4 = Adequately Prepared. Both student teachers and teacher educators reported more information was included in their teacher preparation programs on "increasing reading and writing activities" and "using materials that include more academic content" (Table 1). The mean scores for both items would indicate that "Some information" was provided on these approaches to integration of academic and vocational education. Student teachers reported they received the least amount of instruction in activities related to team teaching with an academic teacher (M = 2.49), while teacher educators felt the least amount of instruction was provided in the area

Table 1
Means and Standard Deviations for Items Relating to Models of Integration of Academic and Vocational Education

	Student Teachers		Teacher Educators	
Item	M	SD	M	SD
Increasing reading and writing activities	3.37	0.73	3.33	1.11
Using materials that include more academic content	3.27	0.79	3.43	0.65
Increasing science activities	2.97	1.07	2.40	0.91
Using the scientific method in student learning activities	2.91	0.87	3.00	0.84
Increasing math activities	2.67	0.84	2.47	0.83
Team teaching with an academic teacher	2.49	0.92	2.73	1.03

Note. 1 = Not Included, 2 = Very Little Information, 3 = Some Information, and 4 = Adequately Prepared. N = 35 for student teachers and N = 15 for teacher educators.

of increasing the amount of science activities in the curriculum (M = 2.40). These mean scores would be interpreted as "very little information" provided in these areas.

According to Table 2, from 40 to 50% of the respondents felt they were adequately prepared for the items "increasing reading and writing activities", "using course materials that include more academic content", and "increasing science activities", while only 11.4% felt prepared for "increasing math activities", and "team teaching with another teacher". In addition, 45.7% indicated that they received little or no information related to team teaching with an academic teacher.

Table 3 shows the responses of teacher educators regarding the type of information included in their teacher education programs. Most (92.9 %) of the teacher educators reported that student teachers were provided some information or were adequately prepared for using or developing curriculum materials that include more academic content. In addition, 66.7% of the teacher educators indicated that their vocational teacher preparation programs adequately prepared students for increasing reading and writing activities in their classes. Increasing math and science activities were the two items reported least frequently by the teacher educators, with only 13.3% in each category selecting "adequately prepared" as their choice.

Table 2
Percentages of Responses from Student Teacher Questionnaires

	% of responses			
Items	Not Included	Very Little Information	Some Information	Adequately Prepared
Increasing reading and writing activities	2.8	5.7	42.9	48.6
Using materials that include more academic materials	5.9	2.9	50.0	41.2
Increasing science activities	11.4	22.9	22.9	42.9
Using the scientific method	8.8	14.7	52.9	23.5
Increasing math activities	11.4	22.9	54.3	11.4
Team teaching with an academic teacher	17.1	28.6	42.9	11.4

Note. N = 35.

To determine which types of courses contained information related the integration of academic and vocational education, the instrument listed seven types of courses and an "other" category and asked the respondents to check those that applied. If the other

category was checked , respondents were asked to write in the type of course that was applicable. Table 4 reports the frequencies and percentages from the student teachers and teacher educators in response to the second part of the questionnaire which related to which types of courses included content or assignments related to the integration of vocational and academic education.

The student teachers felt very strongly that methods and student teaching experiences contained information related to the integration of academic and vocational education. In these two categories 33 of 35 (94.3%) selected methods, and 30 of 35 (85.7%) selected student teaching as those types of courses that related to integrating academic and vocational education. The type of course selected least by the student teachers was history and philosophy with 49% of the student teachers (17) not selecting this choice. Four of the 35 student teachers selected the other category. Two of those wrote in "Improving Reading in Secondary School" as their choice. One of the other two wrote in "Teaching Diverse Populations (Multicultural Education)" and the final student teacher wrote in "Classroom Management".

Table 3
Percentages of Responses from the Teacher Educator Questionnaires

Items	Not Prepared	Very Little Information	Some Information	Adequately Prepared
Using or developing curriculum materials that include more academic content	0.0	7.1	42.9	50.0
Increasing reading and writing activities	13.3	6.7	13.3	66.7
Using the scientific method	0.0	33.3	33.3	33.3
Team teaching with an academic teacher	20.0	6.7	53.3	20.0
Increasing math activities	6.7	53.3	26.7	13.3
Increasing science activities	13.3	46.7	26.7	13.3

Note. N = 15.

As shown in Table 4, the teacher educators identified methods courses most often as providing instruction in integration of academic and vocational education. The second highest category indicated by the teacher educators was curriculum development or program planning courses (80%). None of the teacher educators selected seminar courses as a choice, and less than half selected history and philosophy (46.7%) or introduction to teaching in their field (40%) as courses that related to integrating academic and vocational education. Six of the teacher educators selected the "other" category, with

three teacher educators identifying "reading in content areas". The other three wrote in: "special technical courses and special problems courses", "youth organization and management", and "supervision and coordination of business and marketing education".

In addition to responding to specific items on the questionnaire, the teacher educators were also requested to provide any additional information in the form of course syllabi, specific assignments, or course content related to integration of academic and vocational education. The responses included devoting class periods to integration of academic and vocational education, requiring problem solving and research papers, including math and science activities, and stressing the scientific method. Other activities identified were reading assignments, interviews with teachers, and student teaching assignments. Some of the specific courses listed were "teaching reading in the content areas", "Laboratory experiences in area schools", "methods and materials in secondary school subjects", and "professional education seminar".

Table 4
Frequencies and Percentages For Courses that Included Content on Integration of Academic and Vocational Education

	Student Teacher		Teacher Educator	
Items	f	%	f	%
Introduction to teaching	19	54.3	10	66.7
History and philosophy	18	51.4	7	46.7
Curriculum development or program planning	26	74.3	12	80.7
Introduction to vocational education(or specific program area)	20	57.1	6	40.0
Seminar courses	21	60.0	0	0.0
Methods of teaching	33	94.3	15	100.0
Student teaching	30	85.7	9	60.0

The final item of the instrument asked respondents to circle the response that best represented their opinion of their undergraduate teacher education in regards to the integration of academic and vocational education. The five choices were: 0 = None, 1 = Poor, 2 = Fair, 3 = Good, and 4 = Excellent. The overall mean score for the student teacher responses to this item was 2.74, which was categorized as "Fair". Only two student teachers choose "poor" as a response. Over 70% of the student teachers selected

either "good" or "excellent" as their response. Overall, 21 (61.8%) of the student teachers felt that their undergraduate teacher preparation program had done a "good job" in preparing them to accomplish the integration of academic and vocational education, and three (8.82%) rated their preparation as "excellent".

The overall mean score for the teacher educator responses to this item was 2.60, which was also categorized as "Fair". Only one teacher educator selected poor as a response. Six teacher educators (40%) rated their teacher preparation programs, as they relate to integration of academic and vocational education, as "fair", and six teacher educators (40%) selected "good". Two teacher educators rated their programs as "excellent". Responses to this portion of the questionnaire were similar for both student teachers and teacher educators.

Conclusions and Recommendations

While vocational teacher education programs are addressing integration of academic and vocational education in their teacher preparation programs, there is still room for improvement. Very little information is included in North Carolina vocational teacher education curricula related to the integration of academic and vocational education for the areas of "team teaching", "increasing math activities", and "increasing science activities". Some information is related to the integration of academic and vocational education for the areas of "increasing reading and writing activities", "using course materials that include more academic content", and "using the scientific method in student learning activities".

"Teaching methods", "curriculum development or program planning", and "student teaching" courses are those that include the most content or assignments that relate to the integration of academic and vocational education. There is no pattern for the specific methods of learning activities used by vocational teacher educators in integrating academic and vocational education in the curriculum. Only student teaching assignments, which were mentioned by one teacher educator seemed to provide first-hand experiences with integration of academic and vocational education.

Improvement is needed in the overall preparation of vocational teachers for their role in the integration of academic and vocational education. While "some" information is being provided on this topic, the vocational student teachers and vocational teacher educators felt that, overall, their undergraduate vocational teacher education programs did a "fair" job in preparing teachers to accomplish the integration academic and vocational education.

North Carolina colleges and universities should review curricula with regard to the integration of vocational and academic education. Vocational teacher education programs should focus more attention on including content and assignments related to the integration of academic and vocational education. Due to the variety of models used in

integration of academic and vocational education, teacher educators should continue to infuse information on integration of academic and vocational education into courses in their teacher preparation programs.

The North Carolina Department of Public Instruction should include competencies in the teaching licensure guidelines that would provide specific expectations for teacher education programs related to integration of academic and vocational education. Inservice education on this topic should continue to be a priority to assure that new teachers are prepared for this aspect of vocational education. This study should be replicated in five years to determine if progress has been made in the preparation of teachers for integration of academic and vocational education.

References

American Vocational Association. (1990). The AVA guide to the Carl D. Perkins vocational and applied technology act of 1990. Alexandria, VA: Author.

Bottoms, G., Presson, A., & Johnson, M. (1992). Making high schools work through integration of academic and vocational education. Atlanta: Southern Region Education Board.

Bouthyette, P. (1992). Horticulture, general science education and the liberal arts: Planting the right seeds. Journal of College Science Teaching, 21(3), 142-148.

Brock, W.E. (1992). A vision for education. Vocational Education Journal, 67(7), 20-22, 69.

Farmer, E.I. (1993). What will tomorrow bring? Preparing a new type of technical teacher for the twenty-first century: Implementing tech prep teacher education programs in four-year colleges and universities. Journal of Industrial Teacher Education, 30(2), 100-104.

Garner-Gilcrist, C. (1993). Mathematics institute: An inservice program for training elementary school teachers. The Journal of the Association of Teacher Educators, 15(3), 56-60.

Gregson, J.A. (1993). Critical pedagogy for vocational education: The role of teacher education. Journal of Industrial Teacher Education, 30(4), 7-23.

Grubb, W.N., Davis, G., Lum, J., Plihal, J., & Morgaine, C. (1991). The cunning hand, the cultured mind: Models for integrating of vocational and academic education. Berkley, CA: National Center for Research in Vocational Education.

Miller, L.E. & Smith, K.L. (1983). Handling nonresponse issues. Journal of Extension, 21, 45.

Newman, M.E. & Johnson, D.M. (1994). Inservice needs of pilot agriscience courses in Mississippi. Journal of Agricultural Education, 35(1), 54-60.

Roegge, C.A. (1994). Implementing vocational/academic integration in disparate school settings. Journal of Vocational and Technical Education, 10(2), 15-22.

Stasz, C., Kaganoff, T., & Eden, R.A. (1994). Integrating academic and vocational education: A review of the literature, 1987-1992. Journal of Vocational Education Research, 19(2), 25-72.

Tierney, D.S. & McKibbin, M. (1993). Strengths and weaknesses in California teacher education programs: A four year review. The Journal of the Association of Teacher Educators, 15(3), 61-70.

Weber, W.A. (1991). Classroom management and teacher education: Trends of the past twenty years. The Teacher Educator, 27(1), 24-30.

DEVELOPING CAREER AND ACADEMIC ASPIRATIONS IN SCHOOL-TO-WORK PROGRAMS:

A QUALITATIVE STUDY OF GENDER PERSPECTIVES

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Developing career and academic aspirations in school-to-work programs:

A qualitative study of gender perspectives

Summary

This paper presents findings of a national longitudinal study of students attending high school programs featuring key school-to-work principles. Based on a qualitative study of gender perspectives, the purpose of this research was to describe students' perspectives on career and academic aspirations as they enter, participate, and approach graduation from high school. Data was drawn from a national, longitudinal, qualitative study and involved a sample of 21 interview transcripts including material from both female and male students. Findings showed similar perspectives on experiences leading to program enrollment decisions. Similarly, both male and female students indicated great appreciation for authentic learning opportunities connecting school, work, and career development. However, female students reported having to overcome stereotypical perceptions regarding women involved in non-traditional activities (e.g., working in electronics) as they participated in programs. Further, although there were no differences in academic and career aspirations related to gender, female students balanced family issues and career goals whereas male students placed little emphasis on family issues in their future plans.

Developing career and academic aspirations in school-to-work programs:

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Introduction

"What are you doing here?," her brother said, when Caroline showed up at the electronics shop. "You are a girl, you are not supposed to be in electronics," her brother continued. "Don't judge me because I'm a girl," Caroline replied. "I bet I can do better than you." And she went on to successfully complete career exploration in electronics as well as in carpentry and business. All in all, participation in a Technical Arts program facilitated her career development and opened up new windows of opportunity for her upon graduation from high school.

Unlike Caroline's story, the majority of female students in high school do not have the opportunity to explore nontraditional career fields as part of a holistic approach linking career development to current education reforms. Traditional enrollments in vocational education continue to show stereotyped program participation. In 1994, for instance, the National Assessment of Vocational Education reported that most vocational programs had stereotyped enrollments. The same report indicated that about half of all school districts did not have provisions to reduce gender bias (e.g. curriculum development, awareness building, etc.). Of those that did offer gender equity activities, the quality was highly varied. This trend is also reflected in postsecondary enrollments showing home economics and health related fields heavily dominated by females, while in all trade and industry areas male students outnumbered females at a rate of 18 to 1 (National Center for Education Statistics, 1995). Thus, it is not surprising to see the preservation of gender bias in occupational trends. The U. S. Department of Labor reported in 1994 that only two of the 10 leading occupations for females were common to males (managers and administrators, sales representatives). However, even in those two instances, the participation of men doubled that of women who were consistently underpaid in comparison to their male peers.

In our democratic society the search for gender equity has found pervasive problems. We have yet to make significant progress in many areas including removing stereotyped messages in school textbooks, teacher training in equity issues, representation of women as administrators and professors in educational institutions, and provisions for incentives and supportive measures for female students (Ellibee & Dougherty, 1996; Klein & Ortman, 1994; Stromquist, 1993).

Gender inequalities have been addressed in the past with the intention to enforce, protect, and promote women's rights in education. Armed with good intentions, Title IX of the Educational Amendments Act of 1972 included gender equity measures covering the following areas: (a) admission of students to educational institutions; (b) treatment of

students regarding courses, counseling, financial aid, housing and facilities, athletics, health, marital or parental status, and scholarships; and (c) opportunities for employment (Stromquist, 1993). This was not enough. Further provisions of the Women's Education Equity Act of 1974 and subsequent vocational legislation included financial resources and technical assistance to foster design, adoption and implementation of new materials to create environments which are more gender equitable in the schools. More recently, the School-to-Work Opportunities Act of 1994 advocated an integrated work-based and school-based learning approach to effectively engage students' interests, develop positive work attitudes and better prepare *all students* for transitional experiences upon graduation from high school.

Based on current enrollment and occupational trends, the call to increase educational and occupational opportunities for minorities and women through improved career guidance and school-to-work related services is timely and needed. Considering these needs and concerns, along with programmatic and instructional issues, several initiatives were launched to meet the reforms advocated by current legislation (e.g., Tech Prep, career academies, youth apprenticeship, technology centers). Although these initiatives follow different implementation approaches, they share four common goals: (a) offer all students the opportunity to participate in performance based education and training programs; (b) help all students attain high academic and occupational standards; (c) expose students to a broad array of career opportunities and facilitate career development and guidance; and (d) increase opportunities for minorities, women, and individuals with disabilities by preparing them for nontraditional careers (General Accounting Office, 1993).

The intended benefits of this movement are good and the premises are sound, but there are still many questions about key elements for implementation that keep feeding the ongoing debate on the lasting value of these initiatives (Grubb, 1994). Indeed, the focus on providing equal preparation and career development opportunities for *all* students through vocational education is a remarkable concept if we consider that vocational education is not precisely a model of equitable participation. Traditionally, vocational education has been regarded as the dumping ground for special needs and academically disadvantaged students who participate in narrowly defined curricula in which enrollment is usually gender biased (e.g., home economics, agriculture) as demonstrated by enrollment reports (National Assessment of Vocational Education, 1994; National Center of Education Statistics, 1995). By adding higher academic standards and focusing on nontraditional broadly-defined occupations with an emphasis in high technology, the stakes are even higher given the historical overt and covert gender biased attitudes in schooling experiences and unequal vocational guidance and counseling. Under these conditions, several questions must be asked: If programs featuring STW principles are more rigorous and challenging, what is the impact on gender participation when females have traditionally been the subject of biased treatment in teaching/learning environments in vocational programs? How are we breaking gender stereotypes to increase female participation in programs emphasizing preparation for broad, nontraditional, high-tech,

high-skill occupations when female students have been socially prepared in and out of the classroom for a traditional division of labor? What are career-oriented programs doing to provide for learning environments sensitive to equal opportunity for all students regardless of gender and other individual characteristics? What kinds of specific practices for career development and guidance are being implemented to address equity in career opportunities for all students?

The principles underlying programs featuring school-to-career curriculum components are theoretically sound and supported by related literature involving equitable career development. Career-oriented programs address, for instance, the need to provide all students, but especially females, with a wide and varied range of exposure and experience in broad occupational areas (Bender, 1994); the use of same sex role models (Bender, 1994; Moffat, 1992); the development of supportive environments both at school and home (Moffat, 1992); and, especially for females, exposure to and reinforcement in academic areas which have been traditionally segregated by gender in favor of males, such as math and science (Donelan, 1992; Hendon & Mahoney, 1996; Moffat, 1992).

Given these antecedents, the purpose of this research was to describe the impact of career-oriented programs featuring school-to-work principles on gender perspectives regarding career and academic aspirations. The objectives were to: (a) characterize perspectives on career and academic aspirations by gender, and (b) identify implications for improvement of equity and access in emerging programs emphasizing school-to-work educational components. The qualitative approach to the analysis of students' perspectives provided rich characterizations of schooling experiences important for the formation of equitable career and academic aspirations.

Method

Research Design

This research was designed around grounded theory. That is, a theory that emerges from a systematic examination of qualitative information describing the topic of interest from the perspective of research participants. Thus, grounded theory does not derive from hypothesis testing. Rather, it is built and verified through systematic comparison of available data (Strauss & Corbin, 1990). In this approach, researchers identify issues relevant to the topics of interest which emerge from the rigorous study of the data, guided only by broad major research questions. This research design is appropriate for documenting students' perspectives on schooling experiences and facilitates the production of a grounded theory describing emerging patterns and providing means for further testing and analyses (Glaser & Strauss, 1967; Strauss & Corbin, 1990).

To examine gender perspectives on schooling experiences of interest, the second design component was grounded in the curriculum concept promoted by current education

reforms. That is, career-oriented curricula (e.g., Tech Prep, youth apprenticeship) characterized by three core requirements including: integration of academic and vocational education, linkages between school and work, and articulation between secondary and postsecondary education. These components are part of the movement underlying emerging career-oriented education (Hayward & Benson, 1993; Phelps, 1992; United States Congress, 1994). Central to this education movement is the provision of quality education for *all* students regardless of race, gender, socioeconomic status, or career goals. The premise is that all students should be well prepared to function effectively in either college or work upon graduation from high school (National Center for Research in Vocational Education, 1993).

Grounding the study on students' insights on career-oriented program experiences provided the framework for interpretation of gender perspectives on the formation of academic and career aspirations. Two major research questions guided this line of inquiry: (a) How do female students experience participation in programs featuring different occupational contexts?, and (b) what schooling experiences facilitate the formation of equal academic and careers aspirations?

Data Source

This research derived from a national, qualitative, longitudinal study entitled *Voices of diversity: The students of emerging vocationalism, 1993-1997*, sponsored by the National Center for Research in Vocational Education. This study features the students' perspectives on their learning experiences at high school programs which integrate key elements of school-to-work programs. The collective experiences of students were examined in the context of a multi-case study approach where each selected program constituted a case.

Program Selection. During the program screening process, 33 programs were identified via descriptions in national publications, program brochures, or nominations from persons knowledgeable of the program(s). Of these, five programs were selected based on the greater extent to which they were comprehensively linking vocational and academic education, secondary and postsecondary learning, and school and work-based curriculum activities. The five selected programs represented urban and suburban locations, and broadly defined occupational curriculum orientations in agriculture, business, science and technology, technical arts, and manufacturing. A brief description of each program is presented in Appendix A.

Student Selection. With the assistance of a program liaison, 25-30 potential participants were recruited at each site. From this pool of potential participants, an average of 16 students were selected at each program based on a convenient sample of beginners (freshmen and sophomores) and completers (juniors and seniors). The selection of participants was based on gender, ethnicity, socioeconomic background, and disability

status, and included an over-sample of minority students to have a more representative student voice in this study. The final sample was characterized by 61% male and 39% female students. Ethnic representation was 34% African-American, 7% Asian, 23% Hispanic, 3% Native American, and 38% Caucasian students.

Data Collection Procedures. A pilot test of instruments and procedures for data collection was conducted at two sites not included in this study. Participants were informed of the purpose of the study, assured confidentiality of all information provided to research staff, and requested their permission to tape record interviews. All interviews were conducted using a semi-structured format guided by broad questions pertinent to the purpose of the longitudinal study. Major questions addressed topics regarding decisions to enroll in the program, kinds of learning experiences found more useful and stimulating, major strengths and weaknesses of the program, and postsecondary plans. Appropriate probes were used to request further elaboration on critical experiences described by students. To get familiar with the classroom context of the program, class observations were also conducted in academic courses (e.g., English, mathematics) and program-specific courses (e.g., computer-aided drafting, agricultural leadership). Observation notes included students' interactions with teachers, peers, mentors, and further evidence on behaviors and activities previously described by students. Three rounds of interviews were completed between 1993-95.

Sampling of Transcript Data

A total of 21 interview transcripts from the *Voices of Diversity* study were used for the purpose of this research (9 female, 12 male). All transcripts represent interviews completed between November and December 1993. Transcripts were randomly drawn from the available material collected at each site including an average of four student interview transcripts per site.

Analysis

A systematic comparative method was used to build our understanding of both female and male students' perspectives on career and academic aspirations and to guide the analysis. The systematic comparative method integrates data collection, identification of themes and analysis with grounded theory. Under this method, we first compared critical experiences or events deemed important by students. Next, we characterized each category of critical experiences and further verified their theoretical properties within and across sites. After each emerging category was exhaustively verified, we proceeded to integrate a theory describing overall findings (for a detailed description of the method see Glaser & Strauss, 1967, pp. 105-111). Key categories and their properties were cross-analyzed and verified by at least two researchers to provide for reliability in the process of analysis, and to question evidence until theoretical saturation was reached.

The two major research questions guiding this study were central to the analysis of the available information. To document each question it was necessary to compare experiences or events found important by students within and across programs, and characterize their descriptions and evaluations of these critical experiences or events. To do so, all interview transcripts were first reviewed and coded individually before convening as a team to build consensus on initial categories. Emerging categories were further characterized in more detail as the verification process of available evidence continued. Consistent descriptions of critical experiences or events characterizing emerging categories were reached when evidence was found in at least half of the student transcripts included in the sample.

Findings

This research confirmed the potential benefits of career-oriented programs for both male and female students regarding the development of academic and career aspirations. Female students, in particular, seemed to benefit more from exposure to career exploration, work-based learning, and holistic career-orientation of curriculum activities and counseling services. However, female students spoke about personal struggles to overcome stereotyped treatment in male-dominated programs. What follows is a description of students' perspectives on experiences prior to enrollment, during their participation in their program, and on future prospects upon graduation from high school.

Perspectives Prior to Program Enrollment

Prior to enrollment in their program, both male and female students consistently reported similar experiences and concerns. Across all programs, female students did not appear to be especially targeted and had to go through a recruitment and application process in which grades and teachers' recommendations played a key role. Beyond these screening considerations, students of both genders spoke consistently about safety issues, parental influences, and program reputation as important considerations for deciding to enroll in their program.

Safety. Both male and female students showed concern about safety issues. The majority of students, regardless of gender, wanted to get away from school environments where safety would be a problem. This was a key consideration for enrollment and in some cases took precedence over the career-orientation of the program. For Laurie, a senior student in Science and Technology, enrollment in her program was an opportunity to escape from the rough environment of her previous school and the social distractions of peer relations built over the years. Lianne, a sophomore student in Business, provided a similar account. She didn't want to go to a bigger school with "a lot more people and a lot of problems." For her, it was the safe and professional-looking atmosphere of the school what made her decide to enroll in a business program.

For male students, safety considerations for enrollment were even stronger. The fear of gang problems, in particular, appeared to be a major concern for male students who had been previously enrolled in inner city schools. "The local high school that I had before has a very bad gang reputation, so I wanted to get away from it," said Marcus, a freshman studying agricultural sciences in a major urban setting in the Midwest. Far away, on the Pacific coast, Julian agreed with Marcus' concern. Indeed, Julian, a senior student in a business program located in the downtown area of a major city, had the same considerations: "There were various schools in the area but the atmosphere in those schools was sort of negative. It was not what I wanted out of high school. I was initially interested in another school but it had a history of gang problems. So I chose the business program because it was small and peaceful."

Family Influence. Strong family influences were identified across accounts of both male and female students. Directly or indirectly, parents and relatives appeared to play a major role in the decision for program enrollment. In the majority of the cases, there was direct parental involvement in helping students decide on which program to enroll. In some instances, students were motivated by parents or relatives working in the field represented by the occupational orientation of the program. Either way, direct and indirect family support seemed to be particularly important for female students, especially those who were considering enrollment in non-traditional programs such as manufacturing, agricultural sciences, or science and technology. "My dad," said Lianne, "didn't want me to go to another nearby school for safety reasons." After that, she began to consider other options until she found out about the business programs which offered a safe and professional-oriented environment. For Laurie, her mother was the reason why she ended up enrolling in a science and technology program. Because of Laurie's excellent grades, her mother encouraged her to apply to the program. Laurie further elaborated: "I thought that this would be a really good opportunity for me because it seemed like the perfect kind of thing I would have wanted. It would really make my family proud, because on both sides of the family I'm the first person to enroll in this program."

Male students were supported in similar ways. Andrew's story is typical of the family role in shaping the decision for program enrollment: "My dad is a machinist and he influenced me to get into the manufacturing program. He talked to me, asked my opinion, and said I would really like to go into the manufacturing field." Carlo, on the other hand, made his own decision but was indirectly motivated by his father's occupation. His father is involved in the carpentry business and he got practical experience working with him. Through this personal experience with his father he developed an appreciation for the carpentry industry and decided to apply for admission at a technical arts program and concentrate in carpentry.

Program Reputation. Considerations for enrollment in programs that were safe were consistent with the commitment of the majority of the students, male and female, to pursue studies in areas featured by their high school program of interest. Driven by early

academic and career aspirations, students were looking for programs which would enhance their chances to go to college and build a career in the future. The program reputation was indeed a major attraction for these students who were highly motivated and qualified for enrollment based on their grades and teachers' recommendations. Rhonda, a senior student in Science and Technology, thought that "the best way to get into a good medical program in college would be to start out in this science and technology school because they have better equipment and specialized courses." The reputation of programs created, however, great competition for admission and students spoke about the sense of pride resulting from the selection process. For instance, Laurie, a student in Science and Technology said that: "It's a real honor to be chosen to this school. They said almost two thousand children wanted to go here. You have to be really good to get in here. When I got the letter I was waiting for from the school, I was holding my breath. I felt pride for getting accepted, not conceit, just glad I was able to do it. It feels like a major accomplishment."

Male students provided similar accounts. "This school's got an excellent reputation in the area," said Julian. "It's a small business school," he continued, "so the student-teacher ratio is very good. The school is famous for its specialized business program." The program reputation was also a consideration for Lenny, a student in science and technology. "I wanted access to better scientific instruction," he observed. He further explained: "The labs here and the computer equipment are just so incredible, better than at my previous school. This program will get me an edge on college." Marcus, a student in agricultural sciences, agreed with this perspective: "I liked all the positive aspects of the school. It has a very low drop out rate, very high number of students who graduate and get college scholarships because of the specialized preparation this school provides."

Perspectives on Schooling Experiences

Once in their program, students began to experience learning activities with occupational focus which may have not been otherwise available at traditional schools (e.g., holistic approach to hands-on activities, work-based learning). All students, male and female, reported a high level of appreciation for these learning opportunities connecting academic and vocational courses, school and work-based learning, and exposure to the different aspects of broad career fields. Although both male and female students spoke enthusiastically about their program experiences, there were some differences in gender perspectives on these experiences. These perspectives are described below.

Authentic Learning. The career-oriented focus of the programs provided students with ample opportunities to experience active learning, connect academic knowledge in an occupational context, and enhance their motivation for further learning. Both male and female students agreed on their level of appreciation for the practical approach to teaching and learning. Because of the program-wide focus on a field of interest, students

were able to establish practical connections between academic subjects and their career interests (i.e., business, science and technology, agriculture, technical arts, manufacturing).

"Ordinarily," Laurie, a student in science and technology explained, "Biology and English would have nothing in common. But in this program they found a way to integrate principles of technology and English. Then to write a report including graphics we have to use computer-assisted drawing programs." She continued to explain that teachers in her program, "are less into telling the answers to problems, having you remembering and regurgitating information. There's more emphasis on comprehension and real learning." Lianne, a sophomore student, expressed that in her business program authentic learning is promoted through Socratic seminars. That is, opportunities for students to view their opinions on a topic in which "there isn't a right or wrong answer but you get to learn a lot from different points of view."

The authentic and practical approach to teaching and learning is not about preparation for a specific occupation as viewed in traditional vocational education. In these programs, it was a teaching and learning medium to engage students in meaningful and challenging school activities. "We don't do shops where it's just the teachers showing us how to do something," Caroline, a student in technical arts, observed. "No, it's hands-on work we do on our own. We learn through practice." Male students agreed. Rod, a manufacturing student, noted that "actually doing something makes you learn more. The lecture gives us the how-to information, but then we're supposed to put it in practice and develop an ability to use it later in other day-to-day problems." Scottie, a student in technical arts, reinforced this view: "You get hands-on and academic experience in this program. Because it's good to incorporate both. The real learning takes place here in school and out there in the real world. It is not only in the classroom."

Career Exploration. Aligned with authentic learning opportunities, a program component with emphasis on career development was present in different formats at the five schools participating in this research. Through career exploration activities, both male and female students were able to connect academic preparation with possible career opportunities in broadly defined fields. These opportunities included in-school career exploration by providing students with access to several occupational modules (e.g., electronics, carpentry, business), or alternative concentrations within fields (e.g., marketing, management, accounting). Further, work-based learning activities, including internships and mentoring experiences with professionals in the community, contributed to the enrichment of students' preparation and career development.

"The internships" for instance, said Lianne, "give you a wide view of what you can do with your future." Maria, a student in Lianne's business program, concurred: "The internship is fun because you do a lot of real office work and you get to see what goes around. It helps you see what is important in industry, how it works, and the kinds of

jobs there are available." For Sara, her participation in a manufacturing program has provided exposure to work-based experiences in local companies and allowed her to develop insightful understandings of all aspects of the manufacturing industry.

Male students agreed with the valuable experiences acquired through work-based learning and exploration of different areas within a field of interest. "This is one of the benefits about the manufacturing program, at least for me," said Eddie. He continued to explain: "Three days of the week we are at the manufacturing academy, and then two days we're at a company where the people there move me around to each of the stations so I get a grasp of what the company does." In a technical arts program, students spend three to four weeks in a shop for career exploration purposes. Then, "halfway through the year," Joe, a student in the program, noted that, "you have to pick the area you want to stay in and pursue that shop for the year." However, during their junior and senior year students can choose other shops, should their interest change. Collectively, these opportunities to connect school and work serve as an excellent medium for career exploration and help both male and female students shape their career interests.

Equitable Experiences. Both male and female students seemed to experience equal excitement for authentic learning experiences which serve to enhance their career development and preparation for college and work. However, female students spoke about stereotyped attitudes from peers and teachers, and the need to prove themselves both academically and in work-based activities, especially in those fields traditionally dominated by males. "The teachers were shocked that me and my friend Rosie were interested in the electronics shop," Caroline said. "And there were a lot of guys thinking that girls can't participate in this program. I proved to them that I could," she noted proudly. Sara, a manufacturing student, agreed on the need to show determination to succeed: "I was determined to show [the male students] that it was no problem for me to participate in the program. Some of the guys thought that if you're a girl, you couldn't do it. Well, soon they learned that girls can do it just as good as the guys." Trying to compete with all the guys was actually "the most exciting thing," for Caroline. "Because," she explained, "all the guys thought they ruled in the program and I guess I was actually proving to them that girls can do the same things they can do."

Across programs, students noted that only a few females enrolled in non-traditional curriculum options (e.g., electronics, manufacturing). "I don't remember how many kids were in here," Marsha, a manufacturing student noted. "But I do know that there were more guys. There were only two girls in the manufacturing program when I enrolled. And last year only three women were accepted in the program." Caroline pointed out that her electronics program "was more for a guy." She went on to suggest that female students have to be tough to be able to compete with their male peers in these male-dominated programs.

When female students realized they could compete with their male peers and successfully perform non-traditional tasks, a powerful sense of fulfillment and accomplishment began to emerge. "My dad was very surprised when I fixed something at home," Caroline commented. Perhaps the account shared by Sara, a manufacturing student, best describes this feeling of discovery and confidence: "It just really fascinated me. Because you take a piece of raw material and you turn in into something that can be used in a machine. I found it amazing that a lot of the guys not enrolled in the program couldn't relate to this and other things I have learned."

Outlook on the Future

All students, regardless of gender, appeared to benefit by participating in career-oriented programs by developing strong and solidly grounded academic and career aspirations. All students indicated college and career aspirations in the field represented by their programs. However, there were gender differences regarding motives underlying future aspirations and perspectives on family priorities.

Academic/Career Aspirations. All students sampled for this study reported college aspirations and had identified career plans around the field represented by their programs. Unlike traditional vocational programs that prepare students for specific jobs, career-oriented programs with rigorous curricula implemented through various combinations of academic, vocational, and work-based learning activities appear to enhance both college and career aspirations upon graduation from high school. For example, going to college was not even a question for Lianne. The question for her was whether to major in business or law. "Finishing school is my priority in life and to get the highest education possible," she said. Laurie, on the other hand, wanted to use her preparation in biotechnology to go into medicine. "I'm thinking more on cardiology. I'd like to be a surgeon," she remarked. For others, like Rosie, the road to college may be longer, but plans are already laid out to accomplish career goals: "I will probably start as a part-time student and work full-time. I will first get an Associate Degree and then I will add two years to get a bachelor's degree in engineering."

Male students also spoke about college plans and majoring in areas related to their high school program orientation. Lenny, for instance, a student in a technical arts program involved in the electronics component was certain of going to college: "A four- or two-year college, whichever comes first, to study electrical engineering. My dreams are to graduate from college, and get a Ph.D." Andrew, a science and technology student, reported similar strong aspirations. To him, the question was about which college to apply and narrowing down choices for major concentration of studies: "With the kinds of things that I'm interested in, I'm leaning toward the medical field, in areas dealing with genes and DNA."

Personal motives underlying academic and career aspirations were somewhat different for males and females. While males appeared to be more interested in the socioeconomic rewards of career choices, females talked about their potential contribution to the common good through their expected professions. Renee and Laurie, students in science and technology and agricultural sciences, respectively, provided revealing accounts in this regard. Renee, for instance, said: "Finding a cure to illnesses is one of my dreams because of my interest in medicine. Cancer, AIDS, for instance. A lot of people have the idea that I'm going to be dead by the time all these problems spread to unmanageable proportions. Why should I care? But I think people tend to forget that their children and their grandchildren will have to deal with these problems. And I would like to be part of the solution to these medical problems." Laurie is also driven by a social concern: "Because the way Americans keep their diet habits, their health is declining and I would like to find a way to combat this. Bad eating habits are putting a great strain on everybody's heart. I would like to turn people around into fitness."

Family Concerns. A major difference in students' perspectives on future prospects was that males did not mention family issues as important, while for females family was a very important consideration around which aspirations were developed. For instance, Jenny wants to be a doctor, but she added that: "I also want to have a family. I want to get married and have some kids." Sara concurred in identifying family issues as priorities in life, besides career aspirations: "I have planned to try to fulfill all of the dreams I've had. Having a nice beautiful home with two stories and, of course, the little four-legged critters to go with it." Others, like Maria, spoke about setting an example in the family. "I want to be the first one to give my parents the opportunity to see me graduate and go on to be somebody," she said. She also shared that she wants to set an example for her brother and sister so "they will go the right way." All these issues are, perhaps, best captured by Shona, a student in science and technology: "I want to make enough money to be comfortable, so I can get my children everything they want. I want to have a family and spend as much time with them as possible. I also want to be able to see my little sister graduate. It's the American dream."

Conclusions and Implications

The impact of career-oriented programs on academic and career aspirations appear to be positive for both male and female students. All students, regardless of gender, shared common considerations regarding their decision to enroll in their programs. Safety issues and program reputation were important factors in the decision making process in which family members played an important role. Early academic and career aspirations seemed to be nurtured and grounded in authentic learning activities connecting academic and vocational coursework and work-based learning opportunities to career development. The career orientation of programs featuring school-to-work principles facilitated the holistic approach to instruction, learning, and career development for both male and female students who valued the opportunity to participate in these programs. Further, all

students reported college and career aspirations built around the curriculum orientation of their high school programs. These findings suggest that once presented with the opportunity to participate in career-oriented programs featuring non-traditional fields (e.g., manufacturing, science and technology) and provided with equal opportunity to learn, female students perform at equal or better levels than their male counterparts and develop aspirations in similar ways. However, unlike males who appear to take for granted family considerations in their future prospects, females place a higher priority on family issues. Academic and career aspirations are weighted according to family priorities in addition to socioeconomic considerations for female students.

In general, these findings are supported by other studies (see for instance Fisher & Griggs, 1995; Heebner, 1995), but caution should be exercised in overemphasizing the equal benefits of career-oriented programs. As these programs become commonplace, their high standards for admission may continue to preclude the enrollment of female students interested in non-traditional programs. As noted in this study, only a few women were enrolled in some of these programs (e.g., manufacturing). Considering that males have been traditionally encouraged to gain a stronger preparation in mathematics and the sciences, females will continue to be at a disadvantage when applying for programs requiring high academic requirements. Gender issues should be addressed much earlier to encourage women to consider these kinds of programs.

Once in the programs, both males and females seemed to be enjoying equal opportunity for learning. However, as one student put it, "you have to be a tough girl to make it." Stereotyped attitudes about females participating in non-traditional programs seem to be alive and well. Although, career-oriented programs seem to be providing quality opportunities to learn for both male and female students, teachers and counselors appeared ill prepared to address gender equity in the schools. Further, the visible discrepancy in valuing family issues in developing academic and career aspirations demonstrates the need to better understand work-family relationships (Burge, 1991; Way & Rossman, 1994).

In conclusion, although career-oriented program show great promise in facilitating sound career development for both male and female students, a lot remains to be done to remove barriers to equitable access, participation, and formation of postsecondary aspirations including a better understanding of emerging work-family roles.

The implications for program improvement include a call for renewed efforts to address gender equity early in school to stimulate female students in developing an appreciation for science and mathematics and non-traditional occupations (e.g., electronics, computers, engineering). Further, it is apparent that better recruitment and career guidance practices are needed to truly address the needs of all students. Content, instruction, and assessment should also be gender sensitive and provisions should be made to review curriculum materials, and provide professional development opportunities to sensitize staff on equity

issues. The work of Cunanan and Maddy-Bernstein (1995) on exemplary career guidance programs, and that of Ellibee and Dougherty (1996) on standards for quality curriculum products in vocational education can provide an excellent framework for establishing equitable programs.

Along with these practical implications, various research questions are warranted to address the effectiveness of specific recruitment strategies, instructional practices eliciting active participation of *all* students, teacher arrangements that facilitate authentic instruction, and the involvement of parents and employers to encourage more females to participate in nontraditional careers. The study of innovative collaborative relationships among teachers, counselors, employers, and parents to help students identify and develop career paths deserves particular attention.

References

Bender, S. (1994). *Factors influencing traditional or non-traditional career related aspirations among female high school students enrolled in science courses.* Unpublished doctoral dissertation, Saskatchewan School Trustees Association, Regina.

Burge, P.L. (1991). Single parents' work and family demands. In G. Felstehausen & J. B. Schultz (Eds.), *Work and family: Educational implications*, (pp. 186-199). Peoria, IL: Glencoe Division, Macmillan/McGraw-Hill.

Cunanan, E.S., & Maddy-Bernstein, C. (1995). Exemplary career guidance programs: Investing in the future. *National Center for Research in Vocational Education, Office of Student Services' Brief*, 7(3), 1-5.

Donelan, B. (1992, April). *Gender role socialization and the choice of an agricultural curriculum.* Paper presented at the annual meeting of the Midwest Sociological society, Kansas City, MO.

Dougherty, B, & Ellibee, M. (1996). *Curriculum quality standards for school-to-work: A guidebook.* Berkeley: National Center for Research in Vocational Education, draft copy.

Fisher, T.A.,& Griggs, M.B. (1995). Factors that influence the career development of African-American and Latino youth. *Journal of Vocational Education Research*, 20(2), 57-74.

Glaser, B.G. & Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Chicago: Aladine Publishers, CO.

Grubb, W.N. (1994), April). *School-to-work programs: True reforms or tired retreads?* Berkeley: National Center for Research in Vocational Education, draft essay.

Hayward , G., & Benson, C.S. (1993). The changing role of vocational-technical education in the United States. *National Center for Research in Vocational Education, Center Work*, 4(2), 1-3.

Heebner, A.L. (1995). The impact of career magnet schools: Experimental and qualitative evidence. *Journal of Vocational Education Research*, 20(2), 27-55.

Hendon, S., & Mahoney, M. (1996). *Broadening your horizons: Career planning in the trades for girls and young women.* Madison: University of Wisconsin, Center on Education and Work.

Klein, S.S., & Ortman, P.E. (1994). *Continuing the journey toward gender equity.* Educational Researcher, 23(8), 13-21.

Moffat, N. (1992, March). *Girls and science careers: Positive attitudes are not enough.* Paper presented at the annual meeting of the National Association for Research in Science Teaching, Boston, MA.

National Assessment of Vocational Education. (1994). *Interim report to congress.* Washington, DC: Office of Educational Research, U.S. Department of Education.

National Center for Education Statistics. (1995). *Vocational education in the United States: The early 1990s.* (NCES 95-024). Washington, DC: U.S. Government Printing Office.

National Center for Research in Vocational Education. (1993, April). *The 1993 agenda for the National Center for Research in Vocational Education.* Berkeley: University of California at Berkeley, Author.

National Center for Research in Vocational Education. (1995, December). *Exemplary career guidance programs: Investing in the future.* Berkeley: University of California at Berkeley, Author.

Phelps, L.A. (1992). *Designing effective education-work linkages.* Issues in Education and Work. Madison: University of Wisconsin, Center on Education and Work.

Strauss, A.L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage.

Stromquist, N.P. (1993). Sex equity legislation in education: The state as promoter of women's rights. *Review of Educational Research,* (63)4, 379-407.

U.S. General Accounting Office. (1993). *Transition from school to work: States are developing new strategies to prepare students for jobs.* (GAO/HRD-93-139). Washington, DC: GPO.

U.S. Department of Labor, Women's Bureau. (1994). *1993 Handbook on women Workers: Trends and issues.* Washington, DC: Author.

United States Congress. *School to Work Opportunities Act of 1994* (P.L. No. 103-239).

Way, W.L., & Martin Rossman, M. (1994). The interrelation of work and family: A missing piece of the vocational education research agenda. *Journal of Vocational Education Research,* 19(2), 1-24.

Appendix A
Description of Career-Oriented Programs

Agricultural Sciences Program: This is an urban comprehensive magnet school situated in the Midwest, serving 478 students in grades 9-12 representing a mix of ethnic backgrounds. The school offers science, business, and technology with a focus on agriculture in a variety of collegiate and career-bound formats. Extensive curricular opportunities exist in horticultural sciences, food sciences, agricultural careers and leadership, and agribusiness. Opportunities to experience authentic learning are provided in many ways at this integrated vocational and academic campus. Through class projects students hypothesize outcomes, gather and analyze data, and report their findings. Further, internship experiences are available for students at the city's board of trade and at the state university.

Business Program: This urban magnet high school located in the West coast began in late 1981 as a partnership between the school district, business community and local government. In 1991, the school added a fashion component to its curriculum with the support of local industries and trade college programs. This high school affords students an opportunity to experience a business-like school climate. Approximately, 865 students enrolled annually and about 86 percent participate in the business component (data from Spring 1994). Over half of the students enrolled come from low socioeconomic backgrounds and represent various ethnic groups. Authentic learning activities are emphasized through class projects which require the investigation of a topic, implementation of the project, and oral/written report of findings. Furthermore, applied academics are integrated using practical applications related to the business world. Internships are also available to students based on academic achievement, faculty recommendations, and demonstrated performance and responsibility.

Technical Arts Program: The program in Technical Arts is one of seven at the host school, the only public school in this metropolitan area located in the Northeast. The program is serving students in grades 9-12 and offering technical programs in the following areas: automotive, auto body, baking, carpentry, culinary arts, computer science, drafting and design, electrical, electronics, and graphic arts. The program focus is on basic transferable skills leading to career and college opportunities. Students in the Technical Arts program (n=225) appear to be from low to middle socioeconomic backgrounds and a diversity of ethnic backgrounds (data from Fall 1993). Using the city as a laboratory and various workplace environments, students are provided with opportunities to apply basic and advanced skills. There are also various opportunities available for advanced summer coursework and internship programs at nearby colleges and universities. Concurrently, the program works closely with local corporations, hospitals, and higher education institutions to provide for paid work-based experiences.

Manufacturing Program: This manufacturing youth apprenticeship program began in September 1992 and is housed in a high school located in a predominantly middle class suburban town in the Midwest. This two-county program is supported by a consortium of 16 manufacturing companies and seven high schools and 38 students were enrolled in 1994, primarily of Caucasian descent. Once in the program, students attend the Manufacturing Academy housed in a local company. Here, students receive two hours a day of hands-on instruction on how to operate 30 basic pieces of equipment in a factory-like environment. Apprentices receive monetary support over a 2-year period with scholarships awarded at the end of the first year based on grade point average. Internships are available for students at participant companies where they rotate in various departments to learn all aspects of the industry. Students may go on to a 4-year college or enroll in the local 2-year technical college and earn an associate degree in applied science.

Science and Technology Program: This suburban magnet high school located in the East focuses on science and technology and offers a full-time program for students in grades 9-12. Its mission is to provide a rigorous college preparatory program to students with an aptitude and interest in the sciences and technology. The magnet school receives 2,500 applications for admission from six surrounding school districts annually but only 400 students are admitted. In partnership with business, industry, and governmental agencies, eleven specialized technology laboratories support the scientific research emphasis of the curriculum. During their senior year, students can elect to work with community-based mentors to complete their required senior year research project.

PRODUCING KNOWLEDGE IN CAREER-ORIENTED PROGRAMS:

STUDENTS' PERSPECTIVES ON SCHOOLING EXPERIENCES

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Producing knowledge in career-oriented programs:

Students' perspectives on schooling experiences

Summary

This paper presents the perspectives on the quality of schooling experiences of 30 students enrolled in five occupational/career-oriented programs (e.g., Tech Prep, youth apprenticeship, career academies). The purpose of this research was to describe students' perspectives on schooling experiences which facilitate authentic learning through a systematic comparative analysis of qualitative information. Findings supported the positive benefits of situated cognition strategies on students learning. The authenticity of a variety of learning experiences connecting school and work in occupational context seemed to provide an excellent medium that facilitates student engagement in the acquisition and production of new knowledge. Apprenticeship opportunities occurring formally and informally, in and out-of-the school, allowed students to learn from experts, in their field of interest, advanced students, and other individuals playing different roles in their preparation. Two additional benefits were identified in the form of meaningful connections students were able to make regarding the application of knowledge to real-world situations and development of personal motivation to take responsibility for their own learning and career development. Implications for practice include the development of challenging integrated academic-vocational curricula, professional development on authentic instruction (e.g., emphasis on higher-order thinking and problem-solving skills), and understanding of strategies to engage all students in active learning.

Producing knowledge in career-oriented programs:
Students' perspectives on schooling experiences

In a now classic episode of "I love Lucy," Lucille Ball played a line worker in a factory trying to keep up with the screening of chocolates on a conveyor belt. An otherwise mindless task was turned into one of the most memorable episodes in the history of the show. Her comic portrayal of top-down management, inflexible line production, and low workers' skills required in the workplace was outright funny. Just another thing of the past, we might think. But is it? The world of work has changed substantially since the times of Lucille Ball. High performance companies now emphasize teamwork involving managers and workers in problem solving, and demand from workers critical thinking and communication skills to participate effectively in contemporary management styles (Bailey, 1991; Smith, 1995). However, employers think that we are still trapped in the past educating individuals for outmoded management styles and low-skill jobs. A report of the William T. Grant Foundation, Commission on Work, Family and Citizenship (1988) indicated that the majority of students graduating from high school lack the necessary skills for successful participation in the workforce or college. Herein lies a call for action and education reforms. Various authors agree on the severity of this problem and have advocated the improvement of linkages between education and work. In his book, *Education and work for the year 2000*, Wirth (1992, p. 154) observed that "we really have crossed over into an electronic/communications era---a post-industrial era that will not permit us, without heavy penalty, to cling to outdated industrial styles of thinking and practice." Hedrick Smith (1995, p. 127) further observed that "the old American educational model no longer fits the new competitive game. Old style *general education* does not deliver enough thinking employees for tomorrow's economy."

Current reform efforts represent a response to these calls for preparing individuals to become problem solvers, critical thinkers, and users of reasoning and communication skills in a variety of real-world situations (Secretary's Commission on Achieving Necessary Skills, 1991; United States Congress, 1994). Designed and implemented with these goals in mind, several initiatives are under way (e.g., youth apprenticeship, Tech Prep), but making progress on this ambitious charge is a challenge that requires quite a departure from traditional modes of teaching and learning. First, it requires a shift from a heavily controlled classroom in which the instructor is the dispenser of knowledge to a more open teaching environment where both students and teachers participate in making sense and understanding learning activities. Second, it calls for moving from an emphasis on rote memorization of facts and figures to more active ways of learning (e.g., by engaging students in generating knowledge through research and problem solving). Third, it demands a shift from individual and fragmented teaching efforts to a collaborative approach grounded in integrated learning activities linking not only subject matter in the school but also with work-based learning occurring outside the school. Some researchers have studied the impact of programs linking education and work on academic performance outcomes (Heebner, 1995) and broad benefits of program

participation (Pauly, Kopp, & Haimson, 1995), while others have focused on integration issues (Stasz, Kaganoff, & Eden, 1994) and teaching methods (Gregson, 1994). There is limited evidence, however, documenting how students participate and evaluate schooling experiences leading to generative learning grounded in different program contexts (i.e., Tech Prep, career academies, youth apprenticeship, magnet programs) and based on their own perspectives.

The purpose of this study was to describe students' perspectives on schooling experiences involving active and authentic learning in five programs linking education and work. Findings emerged from a qualitative analysis of a longitudinal study of high school students guided by two major research questions: (a) How do students participating in programs featuring different occupational contexts engage in authentic learning?, and (b) what schooling experiences facilitate the generation of authentic knowledge? The findings that emerged were consistent with the principles supporting the concepts of situated learning (Brown, Collins, & Duguid, 1989) and authentic instruction (Newmann & Wehlage, 1995).

Situated Learning

Brown and associates (1989) defined situated cognition as learning occurring in meaningful contexts through cognitive apprenticeships. That is, in situations in which students are expected to complete real-world learning activities with the assistance of mentors or expert practitioners in fields relevant to the subject matter. Under these conditions, Harley (1993) added that situated learners are able to acquire and generate information and create their own knowledge. Central to the success of situated cognition is the exposure and participation in apprenticeship activities where students can learn from more experienced learners. Through these interactions students come to understand the application of knowledge in meaningful contexts and acculturate to real-world situations (Brown et al., 1989; Hanks, 1992; Tripp, 1993). The authenticity of the context in which learning takes place and the nature of the interactions between learners and mentors are essential to situated congnition. These authentic learning activities should be characterized by coherent experiences built around actual practices, problems, and practitioners encountered in real-world situations (Brown et al., 1989; Griffin, 1995; Harley, 1993; Suchman, 1987). The effectiveness of situated learning has been documented using a variety of curriculum materials and situated learning experiences on elementary, high school, and adult students (Black, & Schell, 1995; Cognition and Technology Group at Vanderbilt, 1993; Gregson, 1994; Griffin, 1995). Studies to date, however, have been conducted on isolated experiences (e.g., response to mathematics in context, map reading) or using simulation activities involving exposure to problem scenarios, role playing, and videos. There is little information describing how students view their experiences in programs where the whole focus is on situated learning (e.g., youth apprenticeship, career academies).

Innovative programs featuring current education reforms offer great opportunities to study how students acquire and generate knowledge in authentic contexts pervasive to each program. With claims to offer authentic learning opportunities through school-based (i.e., integration of academic and vocational disciplines, emphasis on problem solving, critical thinking), and work-based learning (for example internships, apprenticeships, mentorships), the question that remains is: are these programs helping students engage in meaningful learning?

Authentic Instruction and Learning

Brown and colleagues (1989) believe that authentic activities are what produce meaningful learning by connecting students with realistic applications of knowledge and the culture of the context in which knowledge is applied or generated. This, Hernández-Gantes and Phelps (1995) argued, is what drives the school-to-work transition movement. By exposing students to relevant educational experiences linking both school and work in occupational contexts consistent with their career aspirations, they become better prepared for life after high school. The question is whether some forms of situated cognition are authentic and how can we measure the extent and success of authentic instruction and learning (Tripp, 1993; McLellan, 1994). McLellan (1994) identified six key components of situated cognition useful for evaluation purposes: (a) apprenticeship, (b) collaborative practices, (c) opportunities for reflection, (d) coaching, (e) practical experiences, and (f) integration of learning skills. In an earlier paper, McLellan (1993) also provided several strategies for evaluation including the use of models, portfolios, summary statistics, diagnosis, and criteria for reflection and assessment. The framework developed by Newmann and Wehlage (1995) on authentic achievement is perhaps most useful in understanding how students produce new knowledge through disciplined inquiry that integrates the use of knowledge, skills, and technology. Newmann and Wehlage use standards to evaluate the quality, success, or proficiency of students participating in authentic learning activities. Their criteria for authenticity was developed around three areas: construction of knowledge, disciplined inquiry, and value beyond school. They contend that student-centered practices including discussions, small-group work, and applied projects do not necessarily provide authentic experiences unless instruction involves an emphasis on higher-order thinking, deep knowledge, substantive conversation, and connections to real-world situations encountered outside the school. The standards for authentic instruction are described below in Figure 1 (see Newmann & Wehlage, 1995, for a detailed description of standards and supporting framework).

Both the concept underlying situated cognition and the standards for authentic instruction provide an appropriate framework for the discussion of students' perspectives on schooling experiences in programs linking education and work. Program emphasis on learning in occupational contexts and integrating academic and vocational education hold great promise and much can be learned from students' perspectives on instructional approaches and authentic learning experiences.

Figure 1. Standards for authentic pedagogy: Instruction

Construction of Knowledge
Standard 1. Higher Order Thinking: Instruction involves students in manipulating information and ideas by synthesizing, generalizing, explaining, hypothesizing, or arriving at conclusions that produce new meaning and understanding for them.

Disciplined Inquiry
Standard 2. Deep Knowledge: Instruction addresses central ideas of a topic or discipline with enough thoroughness to explore connection and relationships and to produce relatively complex understandings.

Standard 3. Substantive Conversation: Students engage in extended conversational exchanges with the teacher and/or their peers about subject matter in a way that builds an improved and shared understanding of ideas or topics.

Value Beyond School
Standard 4. Connections to the World Beyond the Classroom: Students make connections between substantive knowledge and either public problems or personal experiences.

Source: Newmann and Wehlage. (1995). Successful school restructuring. A report to the public and educators. p. 17.

Method

Research Design

The research design was guided by grounded theory, a theory that emerges from the rigorous study of available qualitative information describing what is most important for research participants. As such, grounded theory, is inductively derived from the object of study and verified through systematic comparison of data and analysis (Strauss & Corbin, 1990). In this approach, the researcher is not set to test hypotheses but to allow issues relevant to the topic of interest to emerge freely guided only by broad major research questions. This research design is appropriate for documenting students' perspectives on schooling experiences and permits the generation of a grounded theory which evolves from the data in patterns that can be verified through further testing and analyses (Glaser & Strauss, 1967; Strauss & Corbin, 1990).

To ground students' perspectives on schooling experiences of interest we examined interview transcripts of students enrolled in five high school programs featuring current education reforms. The key curriculum components of these programs include the

requirements of situated cognition, namely, apprenticeship opportunities, practice, coaching and mentorship experiences, collaborative learning, emphasis on critical thinking, and integration of learning skills. These components are part of the concept underlying emerging career-oriented education promoted by the Perkins Act Amendments of 1990 and the School-to-Work Opportunities Act of 1994. The principles of situated learning are embedded in this emerging vocationalism and implemented through: (a) integration of academic and vocational education, (b) articulation of secondary and postsecondary learning, and (c) connecting activities between school and work (Hayward & Benson, 1993; Phelps, 1992; United States Congress, 1994). Detailed description of these three levels of integration can be found in several research reports published by the National Center for Research in Vocational Education (NCRVE, 1993).

The integration orientation and occupational focus of the programs selected for this study provided the frame of reference for grounded interpretation of students' perspectives. Two major research questions were used to guide the study: (a) How do students participating in programs featuring different occupational contexts engage in authentic learning?, and (b) what schooling experiences facilitate the generation of authentic knowledge?

Data Source

This research was part of a national, qualitative, longitudinal study entitled *Voices of Diversity: The students of emerging vocationalism, 1993-1997*, supported by the National Center for Research in Vocational Education (NCRVE). The overall purpose of this longitudinal study is to feature the students' perspectives on their experiences as they enter, participate in, and transition from high school to either further education or work. This research focuses on schooling experiences involving a random sample of 30 student interview transcripts from a database of 82 transcripts available. A brief description of the *Voices* study is presented below.

Program Selection. The collective experiences of students in five high school programs constituted the multi-case study approach used in the *Voices* study. Initially, 33 programs were identified through descriptions in recent national publications, program brochures, or provided via nominations from persons knowledgeable of the program(s). These programs were screened for possible selection based on whether the core components of integration mentioned above were present or not. The five selected programs represented urban and suburban locations, and different broadly defined occupational focuses (i.e., agriculture, business, science and technology, technical arts, manufacturing) (see Appendix A for a brief description of each program).

Student Selection. A program liaison facilitated the recruitment of 25-30 potential participants at each site. An average of 16 students were selected from this pool of volunteer students at each program based on a convenient sample of beginners (freshmen

and sophomores) and completers (juniors and seniors). Students were selected based on gender, ethnicity, socioeconomic background, and disability status. Minority students were over-sampled to include a more representative voice in this study. Overall, the sample was characterized by 61% male and 39% female students. Ethnic representation was 34% African-American, 7% Asian, 23% Hispanic, 3% Native American, and 38% Caucasian.

Data Collection Procedures. Instruments and procedures for data collection were pilot tested in two sites not included in this study. Prior to each interview, we explained our research interest to participants and assured the confidentiality of all information. Semi-structured interviews were conducted using broad questions pertinent to the purpose of the longitudinal study. The inquiry was guided by questions regarding decisions to enroll in the program, types of learning experiences found more useful and stimulating, major strengths and weaknesses of the program, and postsecondary plans. Further probing was used to elicit detailed information on critical experiences relevant to the line of inquiry and all interviews were tape recorded with the students' permission. Class observations were also conducted in academic courses (e.g., English, mathematics) and program-specific courses (e.g., computer-aided drafting, agricultural leadership) to take notes on students' interactions with teachers, peers, and mentors and gather further evidence on information previously provided by students. Three rounds of interviews were completed between 1993-95.

Sampling of Transcript Data

Data for this research consisted of 30 student transcripts of interviews completed between November and December 1993. Transcripts were randomly drawn from the original pool of the *Voices* study interview transcripts. A sample of six interview transcripts was drawn from each site based on a 50% male/female representation.

Analysis

The analysis was based on a qualitative grounded theory approach involving a systematic comparison of data to identify themes and build a theory. This method involves a comparison of critical experiences or events within broad categories, characterization of each category, and verification of theoretical properties (see Glaser & Strauss, 1967, pp. 105-111). The two major research questions guiding this study were central to the analysis of the available information. To document each question it was necessary to compare students' experiences or events deemed important within and across programs, and characterize the students' descriptions and evaluations of these critical experiences or events.

All interview transcripts were first reviewed and coded individually before convening as a team to build consensus on initial categories. After agreeing on initial categories based

on guiding questions, we identified experiences and incidents describing in more detail emerging categories (e.g., how students described authentic learning activities). Consistent descriptions of critical experiences or events characterizing emerging categories were reached when evidence was found in at least half of the participants within each site and at least three of the five programs.

Findings

Based on students' perspectives on schooling experiences in programs linking education and work, three major categories involved in the generation of students' authentic learning were identified. The emerging categories included activities leading to production of authentic learning, connecting learning to real-world situations beyond the classroom, and development of personal motivation for learning. Findings are illustrated by selected accounts that best typify the sentiment and perspectives found consistent across programs.

Producing Authentic Learning

Production of authentic learning appeared to be facilitated by the occupational/career context of each program. The occupational/career orientation of the programs, in turn, provided multiple opportunities for formal and informal apprenticeship experiences to students in combination with rigorous instructional activities. Instruction, across all programs, shared an emphasis on acquiring and exercising higher-order thinking, problem solving, reasoning, and communication skills. Collectively, the occupational context, apprenticeship opportunities, and focus on authentic instruction created an environment conducive to acquiring and producing new knowledge grounded in real-world situations meaningful to students.

Occupational/career context. Common across all programs was an occupational program focus in which authentic learning was grounded. This focus appeared to be a basic requirement around which classroom activities were integrated, to a different extent, in each program due to their unique circumstances, resources, and approach to implementation. For instance, Stefan, a junior student in the Technical Arts program, explained that the "program combines exploration of several industries in the school and how the city works to understand what goes on around us." Stefan comes from a middle class family of Portuguese descent. He was excited about the diversity in learning opportunities in his program and the focus on hands-on work where individual creativity can bloom. "In this program," he added with enthusiasm, "we spend some time learning what we can do in different shops during our freshman year. In the sophomore year we pick out a shop we want for one term and then we can switch to another one after another term or we can stay there if we want." Kenny, an African American student in his senior year evaluated the program focus by indicating that, "you get hands-on and academic experience, because it's good to incorporate both. In the past people would think that this

program was only for learning a trade and that it was not possible to go on to higher education. Actually that's not true because you have to use both hands and mind in this program."

Similar accounts were shared by students participating in the other programs featured in this study. In general, the majority of students viewed the occupational context of their programs as useful for grounding and understanding of knowledge applications in their respective fields of interest (i.e., agriculture, science and technology, business, and manufacturing).

Apprenticeship opportunities. Opportunities to learn from expert individuals (e.g., mentors, workplace instructors, peers) were available in different formats in all programs. For instance, students in the manufacturing program spend two hours a day at a Manufacturing Academy learning how to operate different equipment and work on projects under the supervision of a master instructor. Opportunities for practice abound and learning from others occurs as students consult with each other or with the instructor to solve problems and complete assigned tasks. "This is how the real learning takes place," observed Jeffrey, a student participating in the manufacturing program. He also noted that the real learning "happens in the school and out there in the real world. It is not just in the classroom, but also in a social perspective learning from others in the workplace. Because, if you want to learn from someone else, that person would have to know you and by the same token you should be able to relate to that person at work." Karen, another student in the manufacturing program agreed and offered her own perspective:

> "I seem to learn more when I'm at my company than I do in the classroom because I've got experienced people to learn from. They come and explain things to me and ask me all sorts of questions to find what I know. If I don't know, they'll teach me."

The majority of the students agreed that classroom instruction without apprenticeship opportunities limits their enthusiasm for learning because it can become highly predictable. However, students also recognized that academic school work can provide the foundations for lifelong learning and application of knowledge beyond work-related activities. Apprenticeship opportunities were also available in the form of mentorship experiences in which students work closely with professionals in the community. Students would either spend time with their mentors outside the school working on projects of common interest or mentors would come to the school periodically to assist students not only on projects but also on career issues. Working with peers was also another way to establish novice-expert relationships to facilitate the generation of academic knowledge as well as for developing social linkages in the school. These apprenticeship/mentorship opportunities were a common factor across all programs and seemed to create a spirit of cooperation and a community of learners.

Authentic instructional activities. Instructional activities were identified by the majority of students as both rigorous and stimulating. Problem solving, reasoning, and communication skills appeared to be emphasized across programs under various formats given the different occupational orientation and instructional approaches found in each program. Collectively, these learning experiences seemed to facilitate in students an appreciation for generation of new knowledge based on program experiences and individual career interest.

The rigorous curriculum and the emphasis on higher-order thinking is typified by Phil, a senior student in an agricultural program. He had been working on a science project since the seventh grade and continued to research it every year. He found it fascinating how much he learned in the area of biochemistry and plant breeding. All along he was challenged to explain his findings, problems encountered, and his thinking. The following is a brief account of how he described his project and his thinking on the subject:

> "One of the problems people have with corn is that it's a seasonal crop. If we have a good season we are usually the leaders in corn production in the United States. But the only time we can produce corn is during the summer time because that's when the conditions are right. Now, if we could only alter the biochemistry of how corn grows by manipulating the genes, we could possibly increase the average yield. The process of growth takes about three months... so if we could expand the growing season not in winter weather but at least through the fall, maybe we could eat corn on the cob in the winter time. It is a matter of isolating the right genes and that's what I'm looking into."

Carol, a student who was working on her senior research project in the Science and Technology program, provided another account of the rigor and higher-order thinking embedded in instructional activities. "My group will be doing a prosthetics project if our teacher approves it. We plan on doing an exploration of what prosthetics will look like in twenty years. We will track the history of prosthetics and then we will spin off in our science project to link with the robotics lab to come up with a prototype of something that might be used in the future. The robotics lab has some muscle wire for artificial arms and we plan on doing a bioengineering project to connect science history to practical applications which may be used in the future in the area of prosthetics engineering." In these projects and authentic activities, students are required to manipulate available information, refine their own ideas, synthesize data, make conjectures, explain their thinking, and make meaningful conclusions to produce new understandings and relations to practical applications.

Deep knowledge is facilitated by the disciplined inquiry required to complete projects either in the classroom or in work-based environments. This process can be best

described by Dale's insights on the things involved in one of his projects. He talked about making small parts with the right dimensions and being careful not to run the machines too fast because "it gets too hot and the tool bit will break." However, he added that "if you run the machines too slow, then you're losing money for your company. So you really have to figure out what your spindle speed is and everything before you start working on anything." Developing such an understanding of the optimum conditions for operation of equipment, the need for quality control, and the implications for the company's success beyond the mere production of parts, required deep knowledge of the topic at hand. It also required thorough knowledge of academic and practical skills connected with making parts and a complex understanding of the repercussions of his performance. "It is not all cut and dry," he observed, "you have got to use your head a little more often to understand what's going on instead of looking in the book to find the answer."

Instructional activities were also described by students as flexible and supportive of exchanges with the instructor or other students. "The most important thing at this school is trust," said Leslie, a sophomore student in the Science and Technology program. "The students get so much trust and respect at this school that it is just a whole different atmosphere than you'd ever imagine anywhere else. What makes a difference is the energy that comes from the students because all of us are so intense working on different projects. So we bring energy and life into the classroom and to the different assignments." Other students agreed with the importance of quality classroom interactions and complained that certain instructors would only focus on the top students of the class. Cleo's comment, a student in the manufacturing program, perhaps best typifies the consensus of students across all programs. "Just being able to talk to other people in the classroom and at our internship places, people who are willing to give their knowledge and skills to me, makes me strive to do better." Wally, a Technical Arts student, reinforced this notion by saying that "teachers need to get us involved in class conversation if we want to learn." He offered the following example:

> "In an English class we had videotapes on drugs and we did a lot of presentations on problems with fights and other school problems. And the class got all the students involved. That was the first time I enjoyed a class because I learned from different points of view and had the opportunity to share mine."

Through these instructional practices focusing on authentic learning activities, students had the opportunity to engage in problem solving (e.g., making parts), experiment, conduct research, make sense of available information, reason and explain their thinking, and communicate findings or ideas to others formally or informally via oral/written reports. The results are obvious in the accounts provided by students. They spoke thoroughly and in depth about different topics addressed in class projects, were articulate in their understanding of learning experiences, and were able to explain knowledge

derived from such experiences. Indeed, a departure from rote memorization of facts and figures.

Connecting Learning to Real-World Situations

Another important aspect of authentic instruction common to all programs was the opportunity for students to make connections to real-world situations either by developing and understanding broad applications of knowledge and skills or by actually participating in work-based situations. By connecting school and work, all of a sudden academic knowledge took new meaning for some students. A powerful discovery of the usefulness of otherwise dry subject matter such as geometry and chemistry. Patricia, a student in the manufacturing program, marveled when thinking about the time she made this discovery:

> "The math teacher was explaining angles and related material and I started to relate it to the parts I was making in the Manufacturing Academy. It really surprised me because I'd be sitting there thinking 'yes, I can relate to that.' So that makes the class more exciting because most of the kids who are not part of the manufacturing program would just stare at the teacher going through this mechanically but not being able to relate it to anything. But for me, it changed my perspective, It really helps me to understand geometry much better when I can relate it to something I know."

Julian, a senior student in the business program, argued that the opportunity to actually do authentic work either in the classroom or as part of internships helped him not only understand better the language of the business world, but it gave him a whole picture of what it takes to run a business. These connections of academic and practical knowledge to real-world situations were also possible through participation in internships and other forms of work-based learning available to students in all programs. Through work-based connecting activities, students are able to learn about various aspects of industries of interest and develop an understanding beyond the mere application of practical skills. Students consistently mentioned the connections they were able to make with the human factor (e.g., co-workers, professionals, mentors) in these work interactions and develop social knowledge related to the culture of occupations and corporations.

Developing Intrinsic Motivation for Learning

An added value to having an occupational program focus, authentic instructional activities, and opportunities for students to connect school and work-based learning is the development of intrinsic motivation to learn. Stimulated by the challenges of rigorous curricula, higher-order thinking activities, and application of knowledge in real-world situations, students appeared to gain an appreciation for academic knowledge and the possible benefits of career plans upon graduation from high school. Rhonda, a student in

the agricultural sciences program, for instance, feels motivated because, she said, "I know a lot more things than kids at other high schools in the area. I have the same classes as other high school students but with these agriculture classes it's like added value on education. This was not important when I was a freshman, but now that I know more about going out in the real world, I know this agricultural knowledge will come handy in the future." Other students, like Julian, get motivated by the potential career opportunities his high school program will provide for him: "By seeing how bad the economy is, how hard you have to work just to eat, and how difficult it is to progress economically, that is what motivates me to work hard now. I'd like to learn the most I can to get more knowledge that will be useful in the future."

The synergy generated by the school culture and curriculum orientation also appears to contribute to the motivation of students. "I think the school orientation [program focus] definitely has a positive impact on you because you are around people with the same interests," noted Edward, a science and technology program student. In such an environment, Paul, another science and technology student, added that "you are challenged and actually learn a lot of practical and academic skills which can be very useful in college."

Discussion and Conclusions

The findings of this study offered no surprises regarding the positive benefits of situated cognition strategies on students learning. Other studies have found similar positive contributions of situated cognition instructional strategies in a variety of settings and circumstances (see for example Black & Schell, 1995; Evanciew, 1994; Griffin, 1995). What is worth noting here is that positive evaluations of participant students addressed not the isolated testing of situated congnition methods or artifacts but an overall approach embedded in programs linking education and work. The authenticity of a variety of learning experiences connecting school and work in an occupational context seems to provide an excellent medium that facilitates student engagement in the acquisition and production of new knowledge. Through apprenticeship opportunities occurring formally and informally in and out-of-the school, students enjoy the benefit of learning from experts in their field of interest, advanced students, and other individuals playing different roles in their preparation.

Authentic instructional activities emphasized in school and reinforced through work-based learning activities appear to be critical to the success of career-oriented programs and to the quality of student learning. Newman and Wehlage (1995) argued that not all practical experiences are necessarily authentic and many of the students' descriptions of instructional activities reflected low levels of authenticity. However, across all programs students' perspectives on instructional activities suggested high levels of authenticity by involving higher order thinking skills, emphasis on in-depth knowledge, and opportunities to research, solve problems, and communicate findings to peers and

worksite mentors. The validity of these claims can be an important point for discussion since no classroom observations were conducted to specifically verify the quality levels of authentic instructional activities. Overall, however, there seem to be plenty of opportunities for high levels of authentic instruction (e.g., senior research projects, manufacturing projects, experiments) across all programs thanks to a highly visible occupational/career focus. Collectively, these instructional activities promote active learning, facilitate production of new knowledge, and engage students in stimulating courses of learning that are anything but boring.

Two additional benefits were identified in the form of meaningful connections students make regarding the application of knowledge to real-world situations and development of personal motivation to take responsibility for one's own learning. Students appear to develop sophisticated understandings of how the world of work operates and the implications for applying academic and practical skills beyond production processes. Through these complex understandings, students seemed to develop intrinsic motivation in the form or appreciation for academic subject matter, practical applications, and the expectation of future benefits to career plans.

In light of these findings it is necessary to ask some critical questions as career-oriented programs become commonplace around the nation. First, given the increasing but varying levels of academic rigor observed in these programs, how do we ensure equal access and opportunity to learn for all students as promised by education reforms undergirding these programs? Second, because of the complexity of implementing true authentic instructional activities, how can we assure high levels of authenticity both in school and work-based learning settings? Third, how can we build a community of learners, including employers, where apprenticeship opportunities in the workplace become a rigorous learning experience grounded in real work practices instead of specific preparation for jobs? These and other related questions need to be addressed if we are to provide challenging curricula linking education and work to all students.

The standards for authentic instruction (Newman & Wehlage, 1995) and the National Council of Teachers of Mathematics Standards (NCTM, 1989) offer excellent frameworks to guide efforts in developing integrated authentic curricula by envisioning content, pedagogy, and assessment as integral components of teaching and learning. The challenge lies in bringing administrators, academic and vocational instructors, and employers together for curriculum development purposes. A daunting task indeed, but a task deserving serious consideration.

References

Bailey, T. (1991). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher*, 20(2), 11-20.

Black, R., & Schell, J. W. (1995). Learning within a situated cognition framework: Implications for adult learning. (Paper presented at the 1995 meeting of the American Vocational Association, Adult Vocational Education Division. Denver, CO).

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.

Cognition and Technology Group at Vanderbilt. (1993, March). Anchored instruction and situated cognition revisited. *Educational Researcher,* 33(3), 52-70.

Evanciew, C. E. P. (1994). Emerging themes in youth apprenticeship programs: A qualitative study. (Paper presented at the American Vocational Education Research Association Division of the American Vocational Association, Dallas, TX).

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aladine.

Gregson, J. A. (1994). Posing problems to raise student consciousness about values, attitudes, and worker responsibilities: A democratic possibility. *The Journal of Vocational Education Research,* 19(4), 13-35.

Griffin, M. M. (1995). You can't get there from here: Situated learning, transfer, and map skills. *Contemporary Educational Psychology*, 20, 65-87.

Hanks, W. F. (1992). Forward. In J. Lave and E. Wenger. Situated learning. *Legitimate peripheral participation*. New York: Cambridge University Press.
Harley, S. (1993, March). Situated learning and classroom instruction. *Educational Technology*, 33(3), 52-70.

Hayward, G., & Benson, C. S. (1993). The changing role of vocational-technical education in the United States. *Center Work, 4*(2), pp. 1-3. National Center for Research in Vocational Education, University of California at Berkeley.

Heebner, A. (1995). The impact of career magnet high schools: Experimental and qualitative evidence. *The Journal of Vocational Education Research*, 20(2), 27-55.

Hernández-Gantes, V., & Phelps, L. A. (1995). The impact of career-oriented programs on postecondary aspirations: A qualitative study of students' perspectives. (Paper presented at the American Vocational Education Research Association Division of the American Vocational Association, Denver, CO).

McLellan, H. (1993, March). Evaluation in a situated learning environment. *Educational Technology*, *33*(3), 39-44.

McLellan, H. (1994, October). Situated learning: Continuing the conversation. *Educational Technology*, *34*(8), 7-20.

National Center for Research in Vocational Education. (1993, April). *The 1993 agenda for the National Center for Research in Vocational Education.* Berkeley: University of California at Berkeley, Author.

National Council of Teacher of Mathematics. (1989). *Curriculum and evaluation standards for school mathematics.* Reston, VA: Author.

Newman, F. M., & Wehlage, G. G. (1995). *Successful school restructuring: A report to the public and educators.* Madison, WI: Center on Organization and Restructuring of Schools.

Pauly, E., Kopp, H., & Haimson, J. (1995). *Homegrown lessons: Innovative programs linking school and work.* San Francisco: Jossey-Bass.

Secretary's Commission on Achieving Necessary Skills (1991). *What work requires of schools: A SCANS report for America 2000.* Washington, DC: U.S. Department of Labor.

Smith, H. (1995). *Rethinking America.* New York: Random House.

Stasz, C., Kaganoff, T., & Eden, R. A. (1994). Integrating academic and vocational education: A review of the literature, 1987-1992. *Journal of Vocational Education Research*, *19*(2), 25-72.

Strauss, A. L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage.

Suchman, L. (1987). *Plans and situated actions.* New York: Cambridge University Press.

Tripp, S. D. (1993, March). Theories, traditions, and situated learning. *Educational Technology*, 33(3), 71-77.

United States Congress. School to Work Opportunities Act of 1994 (P.L. No. 103--239).
William T. Grant Foundation. (1988). *The forgotten half: Non-college youth in America.* An Interim Report on the School-to-Work Transition. Washington, DC: William T. Grant Foundation, Commission on Work, Family, and Citizenship.

Wirth, A. G. (1992). *Education and work for the year 2000: choices we face.* San Francisco: Jossey-Bass.

Appendix A
Description of Career-Oriented Programs

Agricultural Sciences Program: This is an urban comprehensive magnet school situated in the Midwest, serving 478 students in grades 9-12 representing a mix of ethnic backgrounds. The school offers science, business, and technology with a focus on agriculture in a variety of collegiate and career-bound formats. Extensive curricular opportunities exist in horticultural sciences, food sciences, agricultural careers and leadership, and agribusiness. Opportunities to experience authentic learning are provided in many ways at this integrated vocational and academic campus. Through class projects students hypothesize outcomes, gather and analyze data, and report their findings. Further, internship experiences are available for students at the city's board of trade and at the state university.

Business Program: This urban magnet high school located in the West coast began in late 1981 as a partnership between the school district, business community and local government. In 1991, the school added a fashion component to its curriculum with the support of local industries and trade college programs. This high school affords students an opportunity to experience a business-like school climate. Approximately, 865 students enrolled annually and about 86 percent participate in the business component (data from Spring 1994). Over half of the students enrolled come from low socioeconomic backgrounds and represent various ethnic groups. Authentic learning activities are emphasized through class projects which require the investigation of a topic, implementation of the project, and oral/written report of findings. Furthermore, applied academics are integrated using practical applications related to the business world. Internships are also available to students based on academic achievement, faculty recommendations, and demonstrated performance and responsibility.

Technical Arts Program: The program in Technical Arts is one of seven at the host school, the only public school in this metropolitan area located in the Northeast. The program is serving students in grades 9-12 and offering technical programs in the following areas: automotive, auto body, baking, carpentry, culinary arts, computer science, drafting and design, electrical, electronics, and graphic arts. The program focus is on basic transferable skills leading to career and college opportunities. Students in the Technical Arts program (n=225) appear to be from low to middle socioeconomic backgrounds and a diversity of ethnic backgrounds (data from Fall 1993). Using the city as a laboratory and various workplace environments, students are provided with opportunities to apply basic and advanced skills. There are also various opportunities available for advanced summer coursework and internship programs at nearby colleges and universities. Concurrently, the program works closely with local corporations, hospitals, and higher education institutions to provide for paid work-based experiences.

Manufacturing Program: This manufacturing youth apprenticeship program began in September 1992 and is housed in a high school located in a predominantly middle class suburban town in the Midwest. This two-county program is supported by a consortium of 16 manufacturing companies and seven high schools and 38 students were enrolled in 1994, primarily of Caucasian descent. Once in the program, students attend the Manufacturing Academy housed in a local company. Here, students receive two hours a day of hands-on instruction on how to operate 30 basic pieces of equipment in a factory-like environment. Apprentices receive monetary support over a 2-year period with scholarships awarded at the end of the first year based on grade point average. Internships are available for students at participant companies where they rotate in various departments to learn all aspects of the industry. Students may go on to a 4-year college or enroll in the local 2-year technical college and earn an associate degree in applied science.

Science and Technology Program: This suburban magnet high school located in the East focuses on science and technology and offers a full-time program for students in grades 9-12. Its mission is to provide a rigorous college preparatory program to students with an aptitude and interest in the sciences and technology. The magnet school receives 2,500 applications for admission from six surrounding school districts annually but only 400 students are admitted. In partnership with business, industry, and governmental agencies, eleven specialized technology laboratories support the scientific research emphasis of the curriculum. During their senior year, students can elect to work with community-based mentors to complete their required senior year research project.

TURNOVER OF BACCALAUREATE NURSE EDUCATORS IN LOUISIANA

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Abstract

The purpose of this exploratory longitudinal study was to determine which factors influenced turnover of baccalaureate nurse educators. No other studies were reported in the literature regarding nurse educators' intention to leave or turnover. The framework of this study was based on job satisfaction and organizational commitment literature. In the initial survey, one hundred fifteen (92%) of the nurse educators surveyed responded. Each respondent answered a four-part instrument: Job Description Index (JDI) and Job in General (JIG), Organizational Commitment, Intention to Leave, and Personal and Professional Characteristics. A follow-up survey was done of the employers regarding the employment status of these educators three semesters later. Multiple regression was used to measure intention to leave. Discriminant analysis was used to measure turnover. Follow=up results indicated fifteen variables that could predict turnover (Wilks' lambda of 0.4467, $p = 0.000$). Loss of nurse educators could affect the delivery of nursing education at all levels.

Introduction

Amidst all the confusion about layoffs and difficulty getting jobs, leading authorities have indicated a continued need for nurses (American Association of Colleges of Nursing [AACN], 1992, 1994; Betts, 1996; DeYoung & Bliss, 1995; Keepnews, 1996, McCloskey, 1995; Pew Health Professions Commission (Pew Commission), 1991; 1995 United States Department of Health and Human Services (USDHHS), 1991; Wilkinson, 1995). The Secretary of USDHHS stated most of the states will have increased demands for Licensed Practical Nurses/Licensed Vocational Nurses (LPNs/LVNs) between 1900-2000. Although the shortage of nurses may not be as high in some states, he pointed out that the "national nursing shortage may well become a chronic one" (p. 6).

In 1993, the National League for Nursing (NLN) data reported a 7.6% increase in LPN/LVN programs for 1991. Almost half of the LPN/LVN programs are located in technical or vocational schools and an additional 38.7% of the programs are located in community college settings. Greater numbers of qualified nursing faculty are needed in vocational

education to keep pace with the increased demands. The trend of faculty teaching in LPN/LVN schools is a Baccalaureate of Science Degree (BS) with a minimum of extra courses in vocational education. A BS in nursing does not require education courses and only 59% of all faculty teaching in LPN/LVN schools have a Master's Degrees, which may or may not have included vocational educations courses. DeSevo (1995), DeYoung and Bliss (1995), Ketefian (1991), Mooney (1989), Morvant (1993), NLN (1993), the Pew Commission, (1991), Princeton (1992), Ryan and Irvine (1994), Sherer (1994), and USDHHS (1991) have made comments regarding the need for full-time nurse educators. Studies of faculty members by the Carnegie Institute (1987) do not include nurse educators on any level. Bowen & Sosa (1989), Brown (1986), Matier (1985, 1990), Mooney (1989), and the Pew Commission (1991) indicated reasons for the lack of full-time faculty members in all disciplines. Specific reasons for the lack of nurses have been the following a) lack of credentials (Princeton, 1992), b) the workload (Adams, 1995; Southern Council on Collegiate Education for Nursing [SCCEN], 1994, c) burnout (Barrett, Goldenberg, & Faux., 1992; DeSevo, 1995), d) the requirements to meet tenure and promotion, (SCCEN) e) retirement (Pew Commission, and g) the salary differences between clinical nurses and nurse educators (Brider, 1993; NLN, & Rosenfield, 1991).

The US Bureau of Labor Statistics defined voluntary turnover as the "individual movement across the membership boundary of a social system which is initiated by the individual" (cited in Price, 1977, p. 9). Barrett et al. (1992) and this researcher found little information specific to nurse educator job satisfaction and/or turnover. A multidisciplinary literature search revealed numerous studies of intention to leave and/or turnover for the general population and staff nurses. Several studies were found about faculty turnover. Two meta-analyses of turnover literature (Muchinsky & Tuttle, 1979; Cotton & Tuttle, 1986) studied people from various types of work. In 1994, Irving and Meyer (1994) did an analysis of meta-analyses of turnover research for nurses. Caplow and McGee (1958), Hill (1984), Friedhoff (1988), Smart (1990), and Tanaomi (1990) developed models predicting faculty turnover. Gurney (1990), Irvine and Evans (1995), Price (1977), and Price and Mueller (1986) found that nurses leave their current jobs for a variety of reasons. Barrett et al. (1992) described Canadian nurse educators. She found challenge in the job, independence in making professional decisions, individual autonomy, fringe benefits, amount of paid vacation per year, freedom to choose instructional methods, motivated and stimulating students, individual office space, and geographical location of the employing agency were the items that nurse educators found most satisfying. The lowest satisfiers were opportunity for promotion and time and facilities to do research.

Purpose and Objectives

The nurse educator shortage is potentially influenced by turnover among nursing faculty AND there is a sparsity of qualified replacements for these faculty at all levels of nursing education. In addition, little empirical evidence exists regarding factors which influences

turnover among faculty members. However, nursing faculty issues regarding job satisfaction and commitment can be compared to the same issues of faculty members in other disciplines. Therefore, the purpose of this study was to describe turnover among nursing faculty and to determine what factors would influence the decision of nurse educators to leave their current teaching positions at the universities in Louisiana. Based on the purpose the following objectives were formulated to guide this research:

1. Describe individual and professional characteristics of baccalaureate nurse educators.
2. Describe baccalaureate nurse educators on the following psychological measures: job satisfaction as measured by the Job Descriptive Index and Job in General (JDI/JIG), organizational commitment as measured by the Organizational Commitment Questionnaire, intention to leave as measured by a researcher designed instrument (ITL).
3. Describe differences between leavers and stayers based on intention to leave scores.
4. Determine if any selected personal or psychological measures could increase the researcher's ability to successfully discriminate between stayers and leavers.

Procedure

This is a longitudinal study which first examined responses from 228 full-time nurse educators in 12 baccalaureate degree programs in Louisiana. Cochran's formula was used to determine the minimum required sample size of 125 nurse educators. The initial exploratory study used a mailed four part instrument (Job Descriptive Index and Job in General [JDI/JIG] Questionnaire, Organizational Commitment, Questionnaire, Intention to Leave Questionnaire (ITL), and a Personal and Professional Characteristics Questionnaire to collect the data. A nonresponse follow-up procedure of a post card and a second questionnaire was used to obtain a 92% (n =115) response rate for the first phase. Eighteen months later, a questionnaire regarding the employment status of the 1992 employees was sent to the deans of the 12 programs. During this second phase, all of the deans responded to the employment status of the original 228 nurse educators..

Analysis of Data

The demographic information was reported using means, standard deviations, frequencies, and percentages. Correlations were used to determine relationships between personal and psychological variables. Multiple regression was used to measure the model of intention to leave. Using ITL scores, a t-test was used to differentiate between the leavers and stayers. Discriminant analysis was used to measure turnover.

Results

Most of the nurse educators in Louisiana were female (n =110) or 97%) with a mean age of 44.5 (SD =7.8). None of the nurse educators (n =114) responding to the questionnaire indicated that they were part-time nurse educators. Each of the nurse educators surveyed had

a Master's Degree. Seventy-eight (69%) of the nurse educators were Assistant Professors. Twelve nurse educators out of the 115 nurse educators left their current teaching positions.

Thirty-three of the nurse educators were tenured and 41% of the nurse educators were in a tenure track. Eleven of the nurse educators who were not tenured left. The relationship between tenure and leaving was $r = -.18$ ($p = .05$).

Regarding salary, 102 (88%) nurse educators reported nine month teaching salaries below $35,000. However, there were only 25 (23%) people with yearly salaries in this range. Eleven (9.7%) reported salaries between $35,001 and $45,000; but 62 (66%) reported yearly salaries in that range. Salary was broken down for stayers and leavers. Although 11 of the 12 leavers made below $40,000 the relationship between stayers and leavers was not significant.

Nurse educators reported their outside employment status. Part-time employment referred to employment at other institutions for money. Three-fourths ($n = 86$ or 75%) of the nurse educators reported outside employment during the year. Seventeen (15%) reported they worked over sixteen hours every two weeks. Ninety percent of the stayers and 10% of the leavers did not moonlight. However, 65% of the stayers and 35% of the leavers moonlight over 16 hours every two weeks. There was a low negative relationship between leaving and moonlighting ($r = -.17$, $p = .006$).

Regarding scholarly productivity, the majority ($n = 75$ or 65%) of the nurse educators reported that they had not submitted a manuscript in the last three years. None had published more than five articles. Eighty-one of the nurse educators (70%) had not submitted a grant proposal in the last three years. Eighteen (16%) of the nurse educators had received a grant.

The means of the three psychological test were calculated. Each component of job satisfaction was measured using the JDI/JIG Scales. The facet nurse educators had the highest score on was JIG ($M = 41$, SD 9.2). The overall mean on the Organizational Commitment Questionnaire was 4.7 ($SD = 1.1$). For organizational commitment, the difference between the two groups was $t = -2.89$ ($df = 113$. $p = .005$). The 13 items on the ITL were measured on a seven-point Likert-type scale. Higher scores indicated a higher degree of intention to leave. The overall scores on the ITL ranged from 1.56 to 5.82. Three categories of intention to leave were developed by the researcher using the following scores: 2.5 or less indicated a "Low level" of intention to leave, scores between 2.51 and 5.49 indicated an "Undecided level" or neutral level of intention to leave, and scores 5.5 or more indicated a "High level" of intention to leave. Ninety-four (82%) of the nurse educators were considered undecided or neutral in their decision on intention to leave. Seventeen (14.8%) had "low level" scores and four (3.5%) had "high level" scores. The overall ITL scores ranged from 1.56 to 5.82. The overall ITL score was computed as the mean of the 13 items. The overall mean score was 3.7 ($SD = 1.1$). The difference for the two groups on the overall

ITL score was not significant (t = 1.26, df =113, p = .2). The difference between the two groups for the item "I intend to leave in 6 months to 1 year" was t = -3.17 (df =113, p = .002).

Using multiple regression analysis, a model was found explaining a significant portion of the variance (35%) in ITL (F = 5.07, p = < .001) for nurse educators in higher education. Three variables explained 21% of the variance in the ITL model while eight professional and personal variables added one percent or more of explanatory power to the model. The first three variables were satisfaction with present job, satisfaction with present pay, and satisfaction with opportunities for promotion. Organizational commitment did not enter the model. A Discriminant analysis was done by using all the variables to determine if there was a difference between the stayers and the leavers. Since this was an exploratory study, a stepwise entry of variables was chosen. Fifteen variables entered the equation and the equation remained significant (see Table 1). Commitment was the second variable to enter the equation. Components of job satisfaction did not enter the model until much later. A Wilks' lambda of 0.4467 and Chi Square of 54.39 was reported with 15 degrees of freedom (p = 0.000). Thus, there was a significant difference between the centroids for the two groups. The magnitude of the difference between group centroids of stayers and leavers is expressed in the Eigen value of 1.23856 and a Wilks' lambda of 0.467. As the Wilks' lambda decreases the discriminating power decreases. The standardized and unstandardized function coefficients are presented in Table 2. These coefficients are used to construct the prediction formula derived from this analysis. The structure coefficients ordered by size of correlation within Discriminant function are presented in Table 3. As a result of the Discriminant score, 79.3% of the subjects were correctly classified into groups using all the variables. This equation correctly classified 85 (90%) of the stayers and nine (75%) of the leavers (see Table 4). The substantive significance of percentage of cases correctly classified was assessed using the Tau statistic. This procedure determines how much more group membership was predicted than would have been expected by chance.

Table 1
Characteristics which discriminate between stayers and leavers

Function	Variable	Wilks' lambda	prob.
1	Employment status	.89	.005
2	Commitment	.83	.001
3	Years as Nurse	.77	.000
4	Other Prof organizations	.74	.000
5	Status of Moonlighting	.70	.000
6	ANA/LSNA/ District	.66	.000
7	Tenure	.63	.000
8	Years in TRS	.60	.000
9	Satisfaction with pay	.57	.000
10	Number of moonlighting hrs.	.53	.000
11	University salary	.50	.000
12	Sat. with opp. for promotion	.49	.000
13	Certification	.47	.000
14	Intention to Leave Scores	.46	.000
15	Number of dependent children	.45	.000

Eigenvalue	Wilks' lambda	Chi Square	Rc	p
1.239	0.4467	54.39	0.74	0.000

Rc = Canonical correlation coefficient

Table 2

Standardized and Unstandardized Canonical Discriminant Function Coefficients for Explaining Turnover

Variables	Unstandardized Coefficients	Standardized Coefficients
JDI PAY	0.56 E-01	0.74
JDI OPP	0.30 E-01	0.40
COMMIT	-0.82	-0.79
EMP STATUS	1.60	0.66
DEP CHILDREN	0.18	0.21
LEAVE	0.34	0.34
CERTIFICATION	-0.75	-0.40
TENURE	1.16	0.53
ANA/LSNA/DISTRICT	-2.30	0.36
PROF NURSE ORGANIZATION	-0.95	-0.46
NO. OF MOONLIGHTING HRS	0.261	0.39
UNIVERSITY SALARY	0.56	-0.42
MOONLIGHTING STATUS	1.42	0.60
YEARS IN TRS	0.38	0.68
YEARS AS A NURSE	-0.75 E=01	0.65
CONSTANT	1.90	

Table 3

Structure Coefficients of Discriminant Variables with Discriminant Function Scores

	Function 1
Employment status	0.30
Commitment	-0.30
Tenure	0.24
Sat. with present job	-0.24
No. of dependent children	0.20
Widowed/divorced	-0.16
ANA/LSNA/District	-0.16
Age	-0.16
Years other ret. systems	0.16
Total years nurse ed.	-0.16
No. of dept. others	0.15
Leave Score	0.15
Job in General	-0.14
Years as a nurse	0.12
Total salary	-0.11
Other professional or.	-0.11
Moonlighting hours	0.11
Satis. with pay	0.11
Gender	0.10
Satis. with opp. for promo.	-0.09
Ethnic	0.08
Married	0.08
Status of Moonlighting	0.07
University salary	-0.05
Education	0.04
Rank	0.04
Health	0.04
Single	0.03
Satis. with supervision	-0.03
Years in TRS	0.02
Certification	-0.02
Satis. with Co-workers	-0.02
See Colleagues	0.01

Table 4
Classification of Cases

Actual Group	No. of Cases	Predicted Cases Leavers	Stayers
Leavers	12	9 75%	3 25%
Stayers	94	9 97%	85 91%

Note. Based on 106 cases because of missing data for 9 cases.

The Tau statistic findings were a 79.3% improvement over chance or randomness that could be obtained on these subjects using the deemed predictive formula. See the following equation.

$$\text{Tau for all variables} = \frac{94-(.5)(12)+(.5)(94)}{106-(.5)(12)+(.5)(94)} = 79.3$$

A predictive formula is considered to be substantively meaningful if the Tau statistic is greater or equal to 25%. Box's M is a test for equal covariance matrices and indicates the multivariate normal distribution of the discriminating variables. The Box M was not calculated because too few cases were in group 1. This indicates an inability to determine if the groups were not on the covariance matrix.

Conclusions and Recommendations

For these individuals, job satisfaction was a better indicator of intention to leave. However, organizational commitment was a better indicator of turnover. In addition, one item on the intention to leave questionnaire detected differences between stayers and leavers. Turnover of nurse educators affects the health care of our society. Implications include the need for further research using other variables related to turnover. It is recommended this study be duplicated using a larger sample since the limited geographical area and size may affect the ability to generalize the findings to other populations.

References

Adams, D. (1995). Faculty workload and collegial support related to proportion of part-time faculty composition. Journal of Professional Nursing, 34(7), 305-311.

American Association of Colleges of Nursing. (1992, July). Educators brace for the next nursing shortage-too few faculty. AACN Issue Bulletin, p.1.

American Association of Colleges of Nursing. (1994, March). Nursing schools test their limits with rising enrollments, too few faculty. AACN Issue Bulletin, p. 1.

Barrett, M. C., Goldenberg, D., & Faux, S. (1992). Career patterns and job satisfaction of Canadian nurse educators. Journal of Advanced Nursing, 17, 1002-1011.

Betts, V. T. (1996, January/February). 1996-Speak out for quality care. The American Nurse 28(1), 4.

Bowen, W. G. & Sosa, J. A. (1989). Prospects for faculty in the arts and sciences. Princeton, NJ: Princeton University Press.

Brider, P. (1993). Where did the jobs go? American Journal of Nursing, 93(4), 31-40.

Brown, R. R. (1986). Individual, situation, and demographic factors predicting faculty commitment to the university. (Doctoral dissertation, University of Oregon, 1986).

A Classification of institutions of higher education. (1987). Princeton, N. J.: The Carnegie Foundation for the Advancement of Teaching.

Caplow, T., & McGee, R. (1958). The academic marketplace. New York: Basic Books.

*Cotton, J. L. & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. Academy of Management Review, 7(2), 55-70.

DeSevo, M. R. (1995). Part-time nursing faculty: Suggestions for change. Journal of Nursing Education, 34(7), 294-296.

DeYoung, S., & Bliss, J. (1995). Nursing faculty-An endangered species? Journal of Professional Nursing, 11(2), 84-88.

Friedhoff, W. S. (1988). Faculty turnover: A test of a causal model. Dissertation Abstract International, 50 (University Microfilm Order No. DA 89-13, 172)

Gurney, C. A. (1990). Determinants of intent to leave among nurses with doctoral degrees. (From CINAL (R) 1983- 2/94, UMI Order # PUZ9107506)

Hill, E. A. (1984). A study of commitment to the work organization among community college teachers of developmental/remedial courses. Paper presented at the meeting of American Educational Research Association, New Orleans, LA. (ERIC Document Reproduction Service No. ED 245 764)

Holland, C. (1992). The influence of job satisfaction and organizational commitment on intention to leave of nurse educators. Dissertation Abstracts International, 53 (9), 3119A. (University Microfilms No. DA9302903)

*Irvine, D. & Evans, M. (1995). Job satisfaction and turnover among nurses: Integrating research findings across studies. Nursing Research, 44 (4), 246-253.

*Irving, P. G. & Meyer, J. P. (1994). Reexamination of the Met-Expectations Hypothesis: A Longitudinal Analysis. Journal of Applied Psychology, 79(6), 937-949.

Keepnews, J. D. (1996, January, February). ANA challenges Pew Health Professions' findings. The American Nurse, p. 3.

Ketefian, S. (1991). Doctoral preparation for faculty roles: Expectations and realities. Journal of Professional Nursing 7,(2), 105-111.

Matier, M. (1985). Factors influencing "star" faculty attrition at institutions of higher education: An analysis of the University of Oregon's faculty in the College of Arts and Sciences, 1976/77-1984/85. Doctoral dissertation University of Oregon. Dissertation Abstract International, 46. (University Microfilm No. 85 29528)

Matier, M. W. (1990, February). Retraining faculty: A tale of two campuses. Research in higher education, 31(1), 39-60.

McCloskey, J. (1995). The nurse executive: Breaking the cycle. Journal of Professional Nursing, 11(2), 67.

Mooney, C. J. (1989, January 25). Uncertainty is rampant as colleges begin to brace for faculty shortage expected to begin in 1990's. The Chronicle of Higher Education, pp. 14-17.

Morvant, B. (1993). Louisiana State Board of Nursing Annual report to the Governor of the State of Louisiana. New Orleans, La.

Muchinsky, P. M. & Tuttle, M. L. (1979). Employee turnover: An empirical and methodological assessment. Journal of Vocational Education, 14, 43-77.

National League for Nursing. (1993). Nursing data review 1993 (Publication No. 19-2529). New York: Author.

Pew Health Professions Commission. (1995). Critical challenges: Revitalizing the health for the twenty-first century. San Francisco: University of California.

Pew Health Professions Commission. (1991). Healthy America: Practitioner for 2005. Durham, NC: Duke University.

Princeton, J. (1992). The Teacher Crisis in nursing education-revisited. Nurse Educator, 17(5), 34-37.

Price, J. L. (1977). The study of turnover. Ames: The Iowa State University.

Price, J. L., & Mueller, C. W. (1986). Absenteeism and turnover of hospital employees. Greenwich, CT: JAI Press, Inc.

Rosenfield, P. (1991). Nurse educators 1900: Findings from the faculty census. New York: National League for Nursing.

Ryan, M. & Irvine, P. (1994). Nursing professorate in America: Projected retirements and replacements. Journal of Nursing Education 33,(2), 67-73.

Sherer, J. L. (1994, July 20). Teachers in Demand. Hospitals and Health Networks. 49-50.

Smart, J. C. (1990). A causal model of faculty turnover intentions. Research of Higher Education, 31(5), 405-424.

Southern Council on Collegiate Education for Nursing. (1994). Challenges of a changing health care system for graduate nurse educators. Atlanta GA: Southern Regional Education Board.

Tanaomi, M. (1990). Job satisfaction and intention to turnover: A comparison among groups in academic settings. (Doctoral dissertation, University of LaVerne, CA, 1990). Dissertation Abstract International, 51,(04). (University Microfilm Order No. ADG 90-24491)

United States Department Health and Human Services. (1991). Health personnel in

the United States: Eighth report to Congress. Rockville, MD: Health Resources and Services Administration, Bureau of Health Professionals, Division of Nursing.

Wilkinson, M. (1995). Love is not a marketable commodity: a new public management in the British National Health Service. Journal of Advanced Nursing, 21, 980-987.

A COMPARISON OF THE PERCEPTIONS OF SECONDARY BUSINESS AND OFFICE EDUCATION INSTRUCTORS AND AGRICULTURAL EDUCATION INSTRUCTORS OF THE NORTH CAROLINA VOCATIONAL COMPETENCY ACHIEVEMENT TRACKING SYSTEM (VoCATS)

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Abstract

The purpose of this study was to compare the perceptions of secondary business and office education instructors and agricultural education instructors towards the Vocational Competency Achievement Tracking System (VoCATS) component of the vocational and technical education program in North Carolina. The population for the study included the business and office education instructors (N = 894) and the agricultural education instructors (N = 290) in North Carolina during the 1995-96 academic year. There were significant differences between the perceptions of the business and office education instructors and the agricultural education instructors towards 14 of the 35 survey questions.

INTRODUCTION AND THEORETICAL FRAMEWORK

Hoachlander and Rahn (1994) indicated that in order to establish national skill standards for vocational education programs, tasks need to be completed such as reaching consensus on what constitutes an industry, settling how specific the lists of tasks will be, determining how to set standards, and figuring out how to assess students. McCaslin and Headley (1993) reported on a national study which examined the system of performance measures and standards that had been approved in each of the 50 states, the District or Columbia, Puerto Rico, Guam, and the Virgin Islands in response to the 1990 Perkins Act. Most states (30) had developed a single set of measures to assess both basic and advanced academic skills at the secondary level. Rabinowitz (1995) stressed that flexible systems for assessing job readiness need to be used in conjunction with national skill standards projects. The Division of Vocational and Technical Education Services, within the North Carolina Department of Public Instruction, developed the Vocational Competency Achievement Tracking System (VoCATS) as a vehicle for assessing the competencies being acquired by vocational education students in North Carolina. VoCATS is an instructional process designed to aid teachers in planning and conducting classroom instruction. Teachers document student achievement through the use of pre/interim/post assessments. Each VoCATS test consists of a series of evaluation measures generated from a computerized competency/test item bank.

Legislative incentives and Perkins II have created a demand for a system to structure vocational and technical education locally to assess, teach, and track each vocational student's performance or achievement based on core outcome competencies. Since the early 1970s, vocational and technical education in North Carolina has focused on individualized instruction tied to competency-based education. In recent years, instructional management

techniques and technological developments have evolved to a point at which computer-managed and computer-assisted instruction increasingly is possible. This evolution is making it feasible for local personnel to better manage the instructional environment of competency-based vocational and technical education, with the potential of positive results in student learning. This study is designed to provide vocational and technical education leaders with information regarding the perceptions of secondary business and office education and agricultural education instructors towards the VoCAT system.

PURPOSE AND OBJECTIVES OF THE STUDY

The purpose of this study was to compare the perceptions of secondary business and office education instructors and agricultural education instructors towards the Vocational Competency Achievement Tracking System (VoCATS) component of the vocational and technical education program in North Carolina. The objectives were addressed by examining the following research questions.

Is there as significant difference in the perceptions of North Carolina secondary business and office education instructors and agricultural education instructors:

1. towards the need to continue the VoCAT system?
2. towards the need to train all teachers on the utilization of the VoCAT system?
3. towards the need to make the technology utilized with the VoCAT system more available to vocational and technical education teachers and students?
4. towards the recommendation to the VoCATS Long Range Task Force to utilize the VoCATS pre/post assessments as official evaluation instruments for students enrolled in vocational and technical education courses?
5. towards the appropriateness of utilizing VoCATS as a tool to assist with the integration of core academic and vocational and technical education courses?
6. regarding the development and delivery of VoCATS materials?
7. towards identifying who should be providing the leadership for development of VoCATS materials?
8. regarding whether the implementation of VoCATS has resulted in an improvement in the instructional program of vocational and technical education classes?

Procedures

The population for the study included the secondary business and office education instructors ($N = 894$) and the secondary agricultural education instructors ($N = 290$) in North Carolina during the 1995-96 academic year. The business and office education instructors were identified by obtaining a set of address labels for all the North Carolina secondary school business and office education instructors from the Division of IRM within the North Carolina Department of Public Instruction. The agricultural education instructors were identified using the 1995 - 1996 North Carolina Agricultural Education Directory, which was complied by the Agricultural Education Specialists in the Workforce Development Section of the North Carolina Department of Public Instruction. The business and office education mailing labels and the list of names and addressed identified in the agricultural education directory served as the frame for the study. Random samples ($n = 317$) of business and office education instructors and ($n = 165$) of agricultural education instructors were selected by a computer generated random selection process. Cochran's Formula for Sampling for Proportions with a confidence level of .95 and a .50 population proportion was used to determined the sample size needed (Cochran, 1977).

A data collection instrument was developed for this study to determine the perceptions of North Carolina secondary level business and office and agricultural education instructors towards the Vocational Competency Achievement Tracking System (VoCATS) component of their instructional programs. Content validity of the instrument was assessed by a committee of experts. The instrument was field-tested with 20 randomly selected agricultural education teachers and 20 randomly selected business and office education teachers in North Carolina. The individuals selected to participate in the field test were members of the research population who were not selected to be included in the research sample and they were asked to review the instrument and to make necessary comments or suggestions to improve the clarity of the instrument. Minor changes in the instrument were made on the recommendation of the field test respondents.

Data was collected via a mail survey. According to Miller and Smith (1983), late responses have been found to be very similar to non-respondents. Therefore, follow-up mailings were sent to those members of the samples who failed to respond to the first mailings. The surveys returned by the late respondents (follow-up mailing) were kept separate from those received after the first mailing. A total of 149 responses were received from the business and office education instructors with the first mailing and 32 additional responses were received from the non-responding business and office education instructors after receiving the follow-up mailing. The responses from the follow-up mailing were statistically compared on all variables with the initial responses using Hotelling-Lawley Trace statistics to compared to the responses received from the first mailing and no significant differences were found ($F = 1.188$, $p = 0.255$). Therefore, since no statistically significant differences between early and late respondents were found, the data sets were combined for statistical purposes and were assumed to be representative of the population of business and office education instructors in North Carolina during the 1995-96 academic year. The combined total usable responses from the business and office education instructors was 181 or 57.1%. A total of 104 responses were received from the agricultural education instructors with the first mailing and 35 additional responses were received from the non-responding agricultural education instructors after receiving the follow-up mailing. The responses from the follow-up mailing were compared to the responses received from the first mailing and no significant differences were found ($F = 0.877$, $p = 0.662$). Therefore, since no statistically significant differences between early and late respondents were found, the data sets were combined for statistical purposes and were assumed to be representative of the population of agricultural education instructors in North Carolina during the 1995-96 academic year. The combined total usable responses from the agricultural education instructors was 139 or 84.24%.

Analysis of Data

Interval data were collected on each of the dependent variables in this study. The data for this study were analyzed by descriptive and inferential statistical procedures. Descriptive statistics were utilized for all items in the study and frequencies, means and standard deviations were reported. Hotelling-Lawley Trace statistics were used to compared to the perceptions of the two groups of instructors towards the thirty-five questions on the survey instrument and ANOVA procedures were used to determine which questions the two groups of teachers had significantly different perceptions toward. An alpha level of .05 was selected a priori for this study.

Results

The purpose of this study was to compare the perceptions of secondary business and office education instructors and agricultural education instructors towards the Vocational Competency Achievement Tracking System (VoCATS) component of the vocational and technical education program in North Carolina. Thirty five questions were used on the data collection instrument to obtain perceptions of the agricultural instructors towards the Vocational Competency Achievement Tracking System being utilized by vocational and technical education personnel in North Carolina. The instructors were asked to rate each of the statements on the data collection instrument according to the following scale: 1 = Strongly Disagree (Respondent disagreed with the statement without exception); 2 = Disagree (Respondent disagreed with the statement, but was not 100% opposed to the statement); 3 = Slightly Disagree (Respondent disagreed with some elements of the statement, but not the whole statement); 4 = Slightly Agree (Respondent agreed with some elements of the statement, but not the whole statement); 5 = Agree (Respondent agreed with the statement, but not 100% supportive of the statement); or 6 = Strongly Agree (Respondent agreed with the statement without exception).

Hotelling-Lawley Trace statistics revealed a significant difference ($F = 2.114$, $p = 0.005$). Follow-up ANOVA procedures indicated that there were significant differences between the perceptions of the business and office education instructors and the agricultural education instructors towards 14 of the 35 survey questions (See Table 1).

Generally, it was interpreted that agricultural education instructors and business and office education instructors tended to agree that the VoCAT system should be continued. Both groups of instructors tended to agree that personnel at the state level should arrange for group purchase prices, that a "technical assistance" person should be employed at the state level to provide assistance to local school systems, and that at least one VoCATS coordinator should be employed by every local school system to coordinate and monitor the VoCATS program. They also agreed that the VoCATS communication network should be expanded to include principals, superintendents, and school board members at the secondary level and appropriate personnel at the post-secondary level, and they indicated that the Department of Community Colleges should be encouraged to develop a continuum of the VoCATS process for post-secondary articulation. While both groups of instructors felt that VoCATS should be continued, they both slightly disagreed with the concept that VoCATS should be continue to be the number one priority of vocational and technical education personnel in North Carolina. The perceptions of the agricultural education instructors ($M = 2.80$, $SD = 1.52$) were significantly lower ($F = 10.81$, $p = < .05$) than the perceptions of the business and office education instructors ($M = 3.39$, $SD = 1.66$) regarding the need to continue to identify VoCATS as the number one priority of vocational and technical education in North Carolina.

There was a significant difference in the perceptions of secondary business and office education and agricultural education instructors in North Carolina towards the need to train all teachers on the utilization of the VoCAT system. It appears that both groups of instructors are of the opinion that all teachers should be trained to use the technology and materials which make up the VoCAT system. They agree that all "new teacher training" provided by the vocational and technical education personnel within the State Department of Public Instruction should continue to include an introduction to the VoCATS systems and that vocational teacher educators should provide preservice training on VoCATS for vocational teachers, by respective program area, to ensure their initial competence upon entering the classroom. However, the perceptions of the business and office education instructors were

Table 1

Perceptions of Business and Office and Agricultural Education Instructors Towards Various Aspects of the Vocational Competency Achievement Tracking System in North Carolina

Aspects of VoCATS	Agriculture M[a]	Agriculture SD	Business M[b]	Business SD	F Ratio
Negotiate group purchase prices	4.74	1.14	4.82	1.15	0.34
State-level "technical assistance"	4.63	1.49	4.92	1.49	2.09
Employ local VoCATS coordinators	4.34	1.47	4.88	4.04	2.28
Expand communication network	4.07	1.32	4.19	1.39	0.86
Continuum of VoCATS process	3.95	1.17	4.19	1.36	2.78
VoCATS should be number one priority	2.80	1.52	3.39	1.66	10.81*
New teacher training should continue	5.00	1.04	5.12	1.07	1.90
Provide preservice training on VoCATS	4.86	1.16	4.94	1.17	0.43
Local teacher inservice on VoCATS	4.44	1.33	4.73	1.29	4.88*
Access for instructional management	5.29	0.89	5.43	0.99	1.65
Computerized learning stations	4.85	1.27	5.08	1.09	2.98
An interactive on-line testing approach	4.38	1.43	4.89	1.14	12.62*
An interactive on-line learning approach	4.25	1.19	4.88	1.11	23.96*
Technology for special population students	4.13	1.38	4.57	1.26	8.86*
Students furnished competency profiles	4.12	1.33	4.34	1.34	2.51
Competency profiles for potential employers	4.09	1.32	4.12	1.33	0.08
VoCATS has improved validity of grades	3.68	1.49	3.71	1.49	1.49
Portfolios should be part of VoCATS process	3.64	1.53	3.95	1.45	3.27
Test-item banks need performance items	3.73	1.58	3.99	1.46	2.21
Recognize pre/post assessments	3.19	1.69	3.69	1.56	8.15*
Academic/vocational test-item banks	4.68	1.18	5.08	1.08	9.08*
Electronic competency crosswalk	4.49	1.18	4.83	1.46	6.75*
Planning efforts have improved	3.53	1.42	3.50	1.54	0.01
Coordinate with state-adopted textbooks	5.34	0.99	5.44	0.87	1.11
Material development should be on-going	4.62	1.29	4.93	1.10	5.76*
Aligned VoCATS materials with VSOs	4.61	1.36	4.81	1.22	1.56
Use current and cost-effective technology	4.49	1.23	4.88	1.50	9.19*
Update Program of Studies annually	4.46	1.21	4.75	1.20	5.24*
Businesses serve in an advisory capacity	4.39	1.21	4.77	1.18	9.09*
Develop materials on the State level	4.39	1.37	4.41	1.51	0.04
Responsibility for specialized course materials	3.94	1.43	4.36	1.41	7.98*
Involvement of personnel from other agencies	3.82	1.21	4.17	1.27	7.05*
VoCATS has improved Voc. Ed. instruction	3.79	1.51	4.01	1.55	1.67
Greater student understanding	3.68	1.49	3.94	1.46	2.59
Student achievement has improved	3.56	1.50	3.78	1.38	1.98

Note. Means based on following scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Slightly Disagree; 4 = Slightly Agree; 5 = Agree; 6 = Strongly Agree.

[a] $n = 139$. [b] $n = 181$.

*$p < .05$.

significantly stronger ($F = 4.88$, $p < .05$) than the perceptions of agricultural education instructors regarding the need for the training to remain a priority for personnel development activities completed by local VoCATS Coordinators.

Agricultural education and business and office education instructors agree that the technology utilized with VoCATS should be made available to all vocational and technical education students in the state. They stated that every vocational and technical education teacher should have reasonable access to generate interim tests, scan tests, and utilize test results for instructional management and that there should be computerized learning stations in every North Carolina vocational and technical education classroom to be used with VoCATS.

Even though the mean scores indicated that both groups of instructors agreed with making the technology utilized with the VoCAT system more available to vocational and technical education teachers and students (See Table 1), there were significant differences in the perceptions of the instructors towards the need to do so. The perceptions of the business and office education instructors were significantly stronger than the perceptions agricultural education instructors towards providing interactive on-line learning ($F = 12.62$, $p < .05$) and testing ($F = 23.96$, $p < .05$) for the teaching/learning process in every vocational and technical education classroom and for providing technology and software for on-line teaching and testing of each special populations student in North Carolina ($F = 8.86$, $p < .05$).

There was a significant difference ($F = 8.15$, $p < .05$) in the perceptions of secondary business and office education and agricultural education instructors in North Carolina towards the recommendation of the VoCATS Long Range Task Force to utilize the VoCATS pre/post assessments as official evaluation instruments for students enrolled in vocational and technical education courses. The agricultural education instructors slightly disagreed ($M = 3.19$, $SD = 1.69$) with the recommendation that VoCATS pre/post assessments should be recognized by the State Board of Education as official evaluation instruments for student achievement documentation for vocational and technical education courses while the business and office education instructors indicated that they slightly agreed ($M = 3.69$, $SD = 1.56$) with the recommendation. This disagreement may be due to the fact that both groups indicated that they feel priority should be given to expanding the VoCATS test-item banks to include additional performance based items. Both groups also tended to agree that portfolios and portfolio assessment should be a part of the VoCATS process to be included in exit evaluation for every vocational and technical education student in North Carolina. They agreed that the implementation of VoCATS had resulted in improved validity of student grades, that every student should be provided a profile of his/her vocational and technical education competencies mastered upon exiting the program, and that these profiles should also be made available to potential employers and post-secondary educational institutions.

There were significant differences in the perceptions of secondary business and office education and agricultural education instructors in North Carolina towards the appropriateness of utilizing VoCATS as a tool to assist with the integration of core academic and vocational and technical education courses. While both groups exhibited fairly strong levels of support for this issue, the perceptions of the business and office education instructors were significantly stronger than the perceptions agricultural education instructors towards providing every local education agency with integrated academic/vocational test-item banks for use by all secondary teachers and instructional specialists ($F = 9.08$, $p < .05$), and towards making an electronic crosswalk between vocational and academic competencies identified in the Standard Course of Study available through on-line dissemination ($F = 6.75$, $p < .05$).

North Carolina agricultural education and business and office education instructors agree that VoCATS materials should be coordinated with the state-adopted textbooks for the various vocational education courses and that the material should be aligned with vocational student organization competitive events when feasible. However, the perceptions of the business and office education instructors were significantly stronger than the perceptions agricultural education instructors towards making the development and delivery of complete, standardized, competency-based curriculum packages an on-going process ($F = 5.75$, $p < .05$), towards disseminating the materials through the most current technology available, including electronic downloading and the use of the Information Highway ($F = 9.19$, $p < .05$), and towards updating the Vocational and Technical Education Program of Studies annually or as curriculum packages are delivered rather then every five years ($F = 5.24$, $p < .05$).

There were significant differences in the perceptions of secondary business and office education and agricultural education instructors in North Carolina towards identifying who should be providing the leadership for development of VoCATS materials. Both groups agreed that VoCAT materials should be developed and dissemination by the vocational education personnel within the State Department of Public Instruction unless local school systems offered specialized courses. Then both groups agreed that it should be the responsibility of the local education agencies who offer specialized courses to develop appropriate VoCATS materials for such courses. However, the perceptions of the business and office education instructors were significantly stronger than the perceptions agricultural education instructors towards requiring local school systems who offer specialized courses to assume the responsibility for developing VoCAT materials for those courses ($F = 7.98$, $p < .05$). The two groups also differed significantly in their perceptions, with the business and office education instructors indicating the strongest commitment, towards using businesses to serve in an advisory capacity for the VoCATS process ($F = 9.09$, $p < .05$). The business and office education instructors also had a significantly stronger commitment towards involving personnel from divisions other then that of vocational and technical education within the State Department of Public Instruction, individuals from Local Education Agencies other then vocational and technical education personnel, and individuals from other related agencies in developing and implementing VoCAT materials ($F = 7.05$, $p < .05$).

There were no significant differences between the perceptions of secondary business and office education and agricultural education instructors in North Carolina regarding whether the implementation of VoCATS has resulted in an improvement in the instructional program of vocational and technical education classes. However, both groups slightly agreed that the implementation of VoCATS had improved their instructional programs, resulted in a greater understanding of classroom expectations by students, and improved the levels of achievement by their students.

Conclusions and/or Recommendations

Based on the findings of this study, it is concluded that secondary level business and office education and agricultural education instructors in North Carolina tend to support the continuation of VoCATS. They support employing a VoCATS Coordinators for every local school system as well as a state-level "technical assistance" person. They also feel the VoCATS process should be implemented in the community colleges of the state in order to provide more articulated curricula between the secondary and post-secondary levels. Therefore, it is recommended that a state-level consultant be employed to serve as a technical

assistance person for local education agencies and that every local school system be encouraged to employ at least one VoCATS coordinator. Community college vocational and technical education personnel should also be trained on the utilization of VoCATS and be encouraged to implement the process at the post-secondary level.

Neither the agricultural instructors nor the business and office education instructors support continuing to place VoCATS as the number one priority for the Vocational and Technical Education Program in North Carolina. This would indicate that these two groups of instructors expect the vocational and technical education personnel at the state level to broaden their efforts and to provide services which go beyond curriculum development and instructional assessment.

Business and office education and agricultural education instructors in North Carolina perceive a need to train all secondary level teachers on the utilization of the VoCAT system. Therefore, vocational teacher educators and personnel from within the State Department of Public Instruction should continue to provide preservice and inservice training for vocational education students and teachers on VoCATS, by respective program area, and local VoCATS Coordinators should provide personnel development activities for all vocational and non-vocational teachers in their school systems who are not comfortable with using the VoCATS materials.

Secondary level business and office education and agricultural education instructors in North Carolina feel that the technology utilized with the VoCAT system should be made readily available to vocational and technical education teachers and students, including special hardware and software, when needed, for special populations students. Therefore, vocational and technical education personnel at the state level should take the necessary steps to provide state-level consultation for local education agencies who have questions about VoCATS and they should arrange for group purchase prices for the various VoCATS products.

Agricultural education and business and office education instructors perceive that the implementation of VoCATS has improved validity of student grades. However, agricultural education instructors disagreed with the recommendation that VoCATS pre/post assessments should be recognized by the State Board of Education as official evaluation instruments for student achievement documentation for vocational and technical education courses. The business and office education instructors and the agricultural education instructors agree that portfolios and portfolio assessment should be a part of the VoCATS process to be included in exit evaluation for every vocational and technical education student in the state and that a profile of the vocational and technical education competencies mastered by each student should be available to the student and potential employers and post-secondary institutions upon the exit of the students from the secondary program. Therefore, it is recommended that state-level vocational and technical education personnel develop guidelines and procedures for developing and assessing portfolios and that templates be developed for standardizing the reported of competencies mastered by secondary level vocational and technical education students.

While both groups of instructors indicate that they feel coordinated planning efforts between vocational and non-vocational instructors have only improved slightly with the implementation of VoCATS, it appears that they feel that VoCATS has the potential of being a good tool for improving the integration of vocational and non-vocational instruction. Based on the responses of the instructors in this study, agricultural education and business and office education instructors feel that a state-wide effort should be made to provide every local

education agency with integrated academic/vocational test-item banks for use by all secondary level teachers and instructional specialists and that an electronic crosswalk between vocational and academic competencies should be developed and made available to every local school system. Based on these conclusions, it is recommended that local VoCATS Coordinators work with all the teachers in their units to educate them on the potential use of VoCATS as a tool for improving the integration of vocational and non-vocational instruction.

Agricultural education and business and office education instructors believe that VoCATS materials should be developed and disseminated by state level vocational and technical education personnel unless local school systems opt to offer specialized courses. They feel it is the responsibility of the local school systems to develop appropriate VoCATS related materials for specialized courses if they opt to include them in their local curricula. Based on the findings and conclusions of this study, it is recommended that when teams are put together to develop VoCATS materials, an effort should be made to compose those teams with individuals from business and industry, personnel from divisions other than that of vocational and technical education within the State Department of Public Instruction, individuals from Local Education Agencies other then vocational and technical education personnel, and individuals from other related agencies. However, the majority of the team members should be individuals with a working knowledge of the instructional content being considered.

North Carolina agricultural education and business and office education instructors agree that the implementation of VoCATS has improved their instructional programs, resulted in a greater understanding of classroom expectations by students, and improved the levels of achievement by their students. Therefore, efforts should be made to keep the VoCATS materials up-to-date and in place for the vocational and technical education courses offered in North Carolina.

References

Cochran, W. G. (1977). Sampling Techniques. New York: John Wiley and Sons.

Hoachlander, G. & Rahn, M. (1994). National skill standards: Everyone agrees on the destination. Getting there is another story. Vocational Education Journal, 69(1), 20-22, 47.

McCaslin, N. L. & Headley, W. S. (1993). A national study of approved state systems of performance measures and standards for vocational education. Ohio State University.

Miller, L. E. & Smith, K. L. (1983). Handling nonresponse issues. Journal of Extension, 45-50.

Rabinowitz, S. N. (1995). Beyond testing: A vision for an ideal school-to-work assessment system. Vocational Education Journal, 70(3), 27-29, 52.

Workforce Development Section. (July, 1995). 1995 -1996 North Carolina Agricultural Education Directory. North Carolina Department of Public Instruction, Raleigh, NC.

THE RELATIONSHIP BETWEEN NOCTI WRITTEN AND PERFORMANCE EXAMS

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Abstract

Since 1973, the National Occupational Competency Testing Institute (NOCTI) has provided occupational exams to certify vocational teachers. The purpose of this study was to examine the relationship between the scores on the Written and Performance components so as to determine if scores on the Written only may be sufficient to determine competency. The sample consisted of all scores for examines tested with both Written and Performance exams between 1990 and 1995. Based on 2220 cases, the correlation between all Written and Performance exams was .21. This finding does not support the argument that one exam (i.e. the Written) is sufficient to determine occupational competency.

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Introduction

Since 1973, the National Occupational Competency Testing Institute (NOCTI) has provided occupational exams to certify vocational teachers. From the beginning, these exams have had both a Written and a Performance component. The written exams are typically composed of between 180 and 200 multiple choice questions which are constructed to represent a balanced sampling of the important knowledge within each occupational area. The performance exams are also based on a content analysis, but require the examine to perform several tasks or operations that are typical of each occupational area. Each of the components are constructed, administered and scored using standard testing practices and the resulting scores are provided to the users who typically are state departments of education and cooperating universities. These entities then apply their own criteria to make pass/fail decisions. This process is both time consuming and expensive, but is necessary to assure that prospective teachers have sufficient grounding in their occupation to teach it to others.

A computer-based search of ERIC documents revealed that nothing directly related to the topic was catalogued by ERIC between 1966 and 1995. Whitener (1991) reported on the utility of NOCTI exams for placing military retirees in civilian jobs. Purdue University (1990) and Iowa State University (1991) reported the use of NOCTI Written and Performance exams for certification of vocational teachers in Indiana and Iowa respectively. Pennsylvania, the biggest user of both Written and Performance NOCTI exams, conducted a number studies since 1976 (Kapes, 1976; Kapes & Funk, 1978, 1981; Kapes & Welch, 1985, 1986, 1990; Kapes, 1995) to evaluate the NOCTI exams they were using and to develop statewide norms. While all of these studies dealt with both Written and Performance NOCTI exams, none examined the relationship between the two.

Although the use of both a written and performance exam is a logical approach to accessing competency, it is also reasonable to ask if both are necessary. Given that the construction, administration and scoring of any performance exam consumes more time and expense than does the written portion due to its very nature, it is particularly relevant to question if this test of application yields sufficiently different information to warrant the added time and expense. It is for this purpose that this study was undertaken.

Purpose of the Study

Specifically, the purpose of this study was to examine the relationship between the scores obtained on the Written and Performance components of all teacher examines administered by NOCTI in the U.S. between 1990 and 1995. If it were found that the scores on the two components are highly related it could be argued that it is not necessary to bear the expense of giving both since they each provide approximately the same information.

The following two questions were asked:

1. What is the relationship between the NOCTI Written and Performance exam scores for all examines across all occupations?
2. What are the relationships between NOCTI Written and Performance scores for all examines within each occupation?

Method

Sample

The sample consisted of all scores for examines tested with both the NOCTI Written and Performance exams between 1990 and September of 1995. The sample contained a total of 2,220 sets of scores from throughout the U.S., although they are more heavily clustered in selected states that use both exams in large numbers (e.g. Pennsylvania). The occupational areas covered represented most of the 62 occupations for which NOCTI has exams. Because of revisions in many of these exams over the almost six year period, a total of 85 sets of scores were available for analysis. Eliminating duplication due to exam revisions, a total of 58 different occupations are represented, although for many of these the size of the occupational area sample is relatively small and sometimes only contains one examine.

Data

The data were provided by NOCTI staff and were obtained by extracting the following information from each file: Test Code, Test Title, Written Score in Percent (with one decimal), Performance Score in Percent (with one decimal), and Date Of Exam.

All data were entered into a Lotus 1,2,3 Version 4 worksheet and down loaded to disk. While care was taken to record scores accurately, it is always possible that a data set of this size may contain some errors.

Procedure

Upon receiving the data disk, the data were translated into Excel 4.0 and examined for completeness and possible errors in coding. Except for some omissions in test date, all of the data appeared reasonable and complete and all 2,220 cases were analyzed using the correlation function available in Excel. A total of 86 correlations were attempted using the Pearson Product-Moment Coefficient. Of these, 14 occupational areas codes had only one observation and therefore no coefficient could be calculated. Furthermore, an additional 20 coefficients were computed on less than 10 cases per occupational areas and these are easily affected by one or two outliers and cannot always be trusted. All coefficients are reported in both simple correlation (r) and correlation squared (r2) form. The appropriate Measure of Association for examining the relationship between two

variable using correlational analysis is the correlation squared. This squared coefficient (r2) is the proportion of variance in one score accounted for, or explained, by the other.

Results

All analysis are reported in Tables 1, 2, and 3 which all contain the following:

Test Code (2 to 292)
Test Title (58 different titles)
Sample N (number of examines)
r (Pearson product-moment correlation)
r2 (correlation squared)
First Date (earliest test date)
Last Date (latest test date)

Table 1 presents the data in the order of the test code. It can be noted from the table in the first row that based on all 2220 cases, the correlation between all Written and Performance exams is .21 and r2 is .04. Therefore, only 4 percent of Performance exam scores across all occupations is accounted for by the Written exam. This is, indeed, a relatively small amount. However, this coefficient likely is an underestimate of the relationship because by combining all scores without standardizing them with a common mean and standard deviation assumes that they all have approximately the same degree of difficulty and the same range or spread of scores. From examining the original data set it can be seen that this is not true and is not likely to be true. Therefore, a better estimate of average correlation between the two scores is the median of all coefficients. From Table 3, which reports the data sorted by r and r2, it can be seen that the median coefficient (i.e. the middle coefficient of the 70 which were computed) was .26 or 7 percent shared variance.

Also from Table 3 it can be seen that the highest coefficient was .87, that 14 coefficients were over .50, 24 over .40 and 38 over .25. However, from examining the lower end of this table it can be seen that there are nine coefficients which are negative, but none of these are large enough to be statistically significant at the .01 level. Only one, Cabinet Making & Millwork, with 52 cases and a coefficient of -.28 is noteworthy. Whether there is something about this occupation that causes those who have more knowledge, as measured by the Written exam, to perform less well on the Performance exam, or whether this is just sampling error, cannot be known from this data.

Some of the other noteworthy findings in the data include:

1. From Table 2, which is sorted by Occupational Titles, it can be seen that the most frequent occupations tested with both Written and Performance exams are: Auto Body (121) , Auto Mechanics (127), Automotive Technician (109), Carpentry (269), Electronics Technology (125), Machine trades (128), Quantity Foods (118), and Welding (104). Many of these exams have been revised within the past five years as can be seen by their double entry in the table.

2. For many of the occupational titles, exams are not given frequently enough to justify revision and updating of the performance component. Of the 85 entries included on each table, fully 34 (40 %) have been given less than 10 time over the past five plus years.

3. Although 2220 exams with both Written and Performance components have been given over the past five plus years, this actually represents a relatively small number of exams per state, per year, over this time period. From personal communication with NOCTI staff, it was determined that many more exams were given over this time frame without the Performance component.

Conclusions and Implications

From the findings of this study, it cannot be concluded that there is substantial overlap between the NOCTI Written and Performance exams. Therefore, this finding does not support the argument that one exam (e.g. the Written) is sufficient to determine occupational competency.

At least two competing explanations are possible for this finding, but neither can be concluded from the data examined. These are:

1. That both components (Written and Performance) are reliable and valid measures of occupational competence, but they measure different and only moderately related behaviors and both are desirable and necessary for success as a vocational teacher.

2. That the Written exam is a reasonably reliable and valid measure of occupational competence, but the Performance exam is not, due mainly to its subjective nature and measurement difficulties encountered in assessing performance. Therefore, the moderate to low relationships observed are due primarily to the unreliable and perhaps invalid nature of the performance exam.

Table 1

Correlations Between NOCTI Written and Performance Exams 90-95 (Sorted by Code)

CODE	TEST TITLE	SAMPLE N	r	r2	1ST DATE	LAST DATE
	Entire Sample	2220	.21	.04		
2	Auto Mechanics	1	.00	.00	8/92	8/92
4	Diesel Engine Repair	5	.16	.03	4/90	5/91
5	Small Engine Repair	7	.87	.75	5/90	3/93
7	Carpentry	112	.24	.06	1/90	3/92
8	Computer Science for Sec. Teach.	1	.00	.00	7/92	7/92
17	Quantity Food Preparation	55	.20	.04	3/90	3/93
21	Welding	62	.15	.02	3/90	8/95
33	Materials Handling	9	.57	.33	3/90	4/92
36	Power Sewing	2	.56	.31	11/90	6/92
37	Graphic Arts	5	.40	.16	4/90	12/94
38	Textile Production & Fabrication	8	.53	.28	8/90	7/94
41	Welding	42	.49	.24	4/90	7/95
43	Refrigeration	1	.00	.00	7/92	7/92
44	Heating	2	-1.00	1.00	12/92	11/93
46	Metal Fabrication	1	.00	.00	7/91	7/91
47	Electromechanical Technology	6	.52	.27	4/92	7/94
48	Radio & T. V. Repair	2	-.80	.64	3/94	12/94
62	Metalworking Occupations	7	.26	.07	4/91	12/94
67	Building and Home Maintenance	12	-.19	.04	6/90	12/94
76	Industrial Technology	1	.00	.00	4/94	4/94
80	Computer Science	1	.00	.00	6/91	6/91
81	Child Care and Guidance	14	.01	.00	9/90	7/95
83	Auto Body Repair	40	.18	.03	4/90	7/92
84	Scientific Data Processing	10	-.04	.00	4/90	7/93
85	Microcomputer Repair	4	.07	.01	5/91	11/92
101	Airframe & power plant mech	1	.00	.00	1/95	1/95
103	Auto Mechanics	127	.62	.38	2/90	6/93
106	Air Conditioning, Heating & Refrig.	57	.57	.32	3/90	8/95
107	Carpentry	157	.28	.08	2/92	7/95
108	Electrical Installation	64	.03	.00	3/90	12/93
109	Masonry	1	.00	.00	7/90	7/90
110	Plumbing	38	.20	.04	4/90	7/95
111	Sheet Metal	5	.07	.00	4/90	4/91
112	Architectural Drafting	16	.26	.07	5/90	7/95
113	Machine Drafting	19	.48	.23	4/90	4/92
114	Industrial Electrician	13	.69	.48	3/90	8/91
115	Electronics Communications	2	.81	.66	3/91	3/93
116	Industrial Electronics	18	.54	.29	3/90	9/95
117	Quantity Food Preparation	22	.53	.28	4/93	7/95
119	Printing (Offset)	39	.49	.24	3/90	7/91
120	Machine Trades	128	.12	.01	2/90	7/95
121	Architectural Drafting	2	-1.00	1.00	7/90	5/92
122	Cosmetology	33	.17	.03	3/90	5/92
123	Mechanical Technology	1	.00	.00	6/91	6/91

Table 1

Correlations Between NOCTI Written and Performance Exams 90-95 (Sorted by Code)

CODE	TEST TITLE	SAMPLE N	r	r2	IRST DAT	LAST DATE
124	Cabinet Making & Millwork	52	-.28	.08	5/90	8/95
125	Building Trades Maintenance	43	.42	.18	3/90	7/95
126	Computer Technology	18	.35	.12	5/90	7/95
127	Appliance Repair	3	-.41	.17	3/90	4/91
129	Commercial Art	11	.65	.43	3/90	6/91
131	Machine Drafting	1	.00	.00	5/91	5/91
133	Materials Handling	1	.00	.00	5/95	5/95
135	Painting and Decorating	4	.08	.01	7/90	7/93
140	Tool and Die Making	1	.00	.00	7/90	7/90
142	Building Construction Occupations	50	.35	.12	3/90	11/93
149	Audio-Visual Communications	5	.32	.10	6/91	8/92
151	Brick Masonry	32	.20	.04	5/90	4/95
152	Diesel Mechanics	39	.37	.13	3/90	4/95
153	Electronics Technology	125	.50	.25	1/90	8/95
155	Quantity Foods	77	.16	.03	4/90	7/93
156	Small Engine Repair	21	.41	.16	3/90	4/95
159	Baking	20	.49	.24	4/90	4/95
160	Drafting Occupations	1	.00	.00	2/90	2/90
161	Electrical Construction & Maint.	35	.11	.01	4/90	7/95
170	Commercial Photography	4	.39	.15	5/90	8/92
183	Auto Body Repair	28	.21	.04	11/92	7/95
184	Scientific Data Processing	5	.13	.02	3/94	7/95
185	Microcomputer Repair	3	.50	.25	4/93	11/93
202	Auto Body Repair	53	.12	.01	3/90	7/95
203	Automotive Technician	109	.35	.13	6/92	9/95
206	Drafting Occupations	4	.26	.07	11/94	4/95
208	Electrical Installation	14	.26	.07	11/93	7/95
209	Masonry	3	.25	.06	6/91	3/95
211	Sheet Metal	6	.16	.03	3/92	7/95
213	Machine Drafting	26	.45	.20	7/92	8/95
214	Industrial Electrician	28	.18	.03	4/92	7/95
219	Printing (Offset)	37	.40	.16	6/92	10/95
222	Cosmetology	45	-.03	.00	4/92	8/95
229	Commercial Art	21	.48	.23	7/91	7/95
240	Tool & Die Making	24	.32	.10	2/91	7/95
242	Building Construction Occupations	14	.06	.00	11/93	4/95
249	Audio-Visual Communications	1	.00	.00	4/95	4/95
254	Masonry Occupations	7	-.15	.02	4/90	6/95
255	Quantity Foods	41	.12	.01	11/93	8/95
260	Drafting Occupations	61	.23	.05	3/90	7/95
292	Commercial Art	3	.31	.09	6/92	2/95

Table2

Correlations Between NOCTI Written and Performance Exams 90-95 (Sorted by Test Title)

CODE	TEST TITLE	SAMPLE N	r	r2	1ST DATE	LAST DATE
	Entire Sample	2220	.21	.04		
106	Air Conditioning, Heating & Refrig.	57	.57	.32	3/90	8/95
101	Airframe & power plant mech	1	.00	.00	1/95	1/95
127	Appliance Repair	3	-.41	.17	3/90	4/91
112	Architectural Drafting	16	.26	.07	5/90	7/95
121	Architectural Drafting	2	-1.00	1.00	7/90	5/92
149	Audio-Visual Communications	5	.32	.10	6/91	8/92
249	Audio-Visual Communications	1	.00	.00	4/95	4/95
83	Auto Body Repair	40	.18	.03	4/90	7/92
183	Auto Body Repair	28	.21	.04	11/92	7/95
202	Auto Body Repair	53	.12	.01	3/90	7/95
2	Auto Mechanics	1	.00	.00	8/92	8/92
103	Auto Mechanics	127	.62	.38	2/90	6/93
203	Automotive Technician	109	.35	.13	6/92	9/95
159	Baking	20	.49	.24	4/90	4/95
151	Brick Masonry	32	.20	.04	5/90	4/95
67	Building and Home Maintenance	12	-.19	.04	6/90	12/94
142	Building Construction Occupations	50	.35	.12	3/90	11/93
242	Building Construction Occupations	14	.06	.00	11/93	4/95
125	Building Trades Maintenance	43	.42	.18	3/90	7/95
124	Cabinet Making & Millwork	52	-.28	.08	5/90	8/95
7	Carpentry	112	.24	.06	1/90	3/92
107	Carpentry	157	.28	.08	2/92	7/95
81	Child Care and Guidance	14	.01	.00	9/90	7/95
129	Commercial Art	11	.65	.43	3/90	6/91
229	Commercial Art	21	.48	.23	7/91	7/95
292	Commercial Art	3	.31	.09	6/92	2/95
170	Commercial Photography	4	.39	.15	5/90	8/92
80	Computer Science	1	.00	.00	6/91	6/91
8	Computer Science for Sec. Teach.	1	.00	.00	7/92	7/92
126	Computer Technology	18	.35	.12	5/90	7/95
122	Cosmetology		.17	.03	3/90	5/92
222	Cosmetology	45	-.03	.00	4/92	8/95
4	Diesel Engine Repair	5	.16	.03	4/90	5/91
152	Diesel Mechanics	39	.37	.13	3/90	4/95
160	Drafting Occupations	1	.00	.00	2/90	2/90
206	Drafting Occupations	4	.26	.07	11/94	4/95
260	Drafting Occupations	61	.23	.05	3/90	7/95
161	Electrical Construction & Maint.	35	.11	.01	4/90	7/95
108	Electrical Installation	64	.03	.00	3/90	12/93
208	Electrical Installation	14	.26	.07	11/93	7/95
47	Electromechanical Technology	6	.52	.27	4/92	7/94
115	Electronics Communications	2	.81	.66	3/91	3/93
153	Electronics Technology	125	.50	.25	1/90	8/95
37	Graphic Arts	5	.40	.16	4/90	12/94

Table2

Correlations Between NOCTI Written and Performance Exams 90-95 (Sorted by Test Title)

CODE	TEST TITLE	SAMPLE N	r	r2	1ST DATE	LAST DATE
44	Heating	2	-1.00	1.00	12/92	11/93
114	Industrial Electrician	13	.69	.48	3/90	8/91
214	Industrial Electrician	28	.18	.03	4/92	7/95
116	Industrial Electronics	18	.54	.29	3/90	9/95
76	Industrial Technology	1	.00	.00	4/94	4/94
113	Machine Drafting	19	.48	.23	4/90	4/92
131	Machine Drafting	1	.00	.00	5/91	5/91
213	Machine Drafting	26	.45	.20	7/92	8/95
120	Machine Trades	128	.12	.01	2/90	7/95
109	Masonry	1	.00	.00	7/90	7/90
209	Masonry	3	.25	.06	6/91	3/95
254	Masonry Occupations	7	-.15	.02	4/90	6/95
33	Materials Handling	9	.57	.33	3/90	4/92
133	Materials Handling	1	.00	.00	5/95	5/95
123	Mechanical Technology	1	.00	.00	6/91	6/91
46	Metal Fabrication	1	.00	.00	7/91	7/91
62	Metalworking Occupations	7	.26	.07	4/91	12/94
85	Microcomputer Repair	4	.07	.01	5/91	11/92
185	Microcomputer Repair	3	.50	.25	4/93	11/93
135	Painting and Decorating	4	.08	.01	7/90	7/93
110	Plumbing	38	.20	.04	4/90	7/95
36	Power Sewing	2	.56	.31	11/90	6/92
119	Printing (Offset)	39	.49	.24	3/90	7/91
219	Printing (Offset)	37	.40	.16	6/92	10/95
17	Quantity Food Preparation	55	.20	.04	3/90	3/93
117	Quantity Food Preparation	22	.53	.28	4/93	7/95
155	Quantity Foods	77	.16	.03	4/90	7/93
255	Quantity Foods	41	.12	.01	11/93	8/95
48	Radio & T. V. Repair	2	-.80	.64	3/94	12/94
43	Refrigeration	1	.00	.00	7/92	7/92
84	Scientific Data Processing	10	-.04	.00	4/90	7/93
184	Scientific Data Processing	5	.13	.02	3/94	7/95
111	Sheet Metal	5	.07	.00	4/90	4/91
211	Sheet Metal	6	.16	.03	3/92	7/95
5	Small Engine Repair	7	.87	.75	5/90	3/93
156	Small Engine Repair	21	.41	.16	3/90	4/95
38	Textile Production & Fabrication	8	.53	.28	8/90	7/94
240	Tool & Die Making	24	.32	.10	2/91	7/95
140	Tool and Die Making	1	.00	.00	7/90	7/90
21	Welding	62	.15	.02	3/90	8/95
41	Welding	42	.49	.24	4/90	7/95

Table 3

Correlations Between NOCTI Written and Performance Exams 90-95 (Sorted by r & r2)

CODE	TEST TITLE	SAMPLE N	r	r2	1st DATE	LAST DATE
	Entire Sample	2220	.21	.04		
5	Small Engine Repair	7	.87	.75	5/90	3/93
115	Electronics Communications	2	.81	.66	3/91	3/93
114	Industrial Electrician	13	.69	.48	3/90	8/91
129	Commercial Art	11	.65	.43	3/90	6/91
103	Auto Mechanics	127	.62	.38	2/90	6/93
33	Materials Handling	9	.57	.33	3/90	4/92
106	Air Conditioning, Heating & Refrig.	57	.57	.32	3/90	8/95
36	Power Sewing	2	.56	.31	11/90	6/92
116	Industrial Electronics	18	.54	.29	3/90	9/95
38	Textile Production & Fabrication	8	.53	.28	8/90	7/94
117	Quantity Food Preparation	22	.53	.28	4/93	7/95
47	Electromechanical Technology	6	.52	.27	4/92	7/94
185	Microcomputer Repair	3	.50	.25	4/93	11/93
153	Electronics Technology	125	.50	.25	1/90	8/95
159	Baking	20	.49	.24	4/90	4/95
119	Printing (Offset)	39	.49	.24	3/90	7/91
41	Welding	42	.49	.24	4/90	7/95
229	Commercial Art	21	.48	.23	7/91	7/95
113	Machine Drafting	19	.48	.23	4/90	4/92
213	Machine Drafting	26	.45	.20	7/92	8/95
125	Building Trades Maintenance	43	.42	.18	3/90	7/95
156	Small Engine Repair	21	.41	.16	3/90	4/95
219	Printing (Offset)	37	.40	.16	6/92	10/95
37	Graphic Arts	5	.40	.16	4/90	12/94
170	Commercial Photography	4	.39	.15	5/90	8/92
152	Diesel Mechanics	39	.37	.13	3/90	4/95
203	Automotive Technician	109	.35	.13	6/92	9/95
126	Computer Technology	18	.35	.12	5/90	7/95
142	Building Construction Occupations	50	.35	.12	3/90	11/93
240	Tool & Die Making	24	.32	.10	2/91	7/95
149	Audio-Visual Communications	5	.32	.10	6/91	8/92
292	Commercial Art	3	.31	.09	6/92	2/95
107	Carpentry	157	.28	.08	2/92	7/95
206	Drafting Occupations	4	.26	.07	11/94	4/95
208	Electrical Installation	14	.26	.07	11/93	7/95
62	Metalworking Occupations	7	.26	.07	4/91	12/94
112	Architectural Drafting	16	.26	.07	5/90	7/95
209	Masonry	3	.25	.06	6/91	3/95
7	Carpentry	112	.24	.06	1/90	3/92
260	Drafting Occupations	61	.23	.05	3/90	7/95
183	Auto Body Repair	28	.21	.04	11/92	7/95
110	Plumbing	38	.20	.04	4/90	7/95
17	Quantity Food Preparation	55	.20	.04	3/90	3/93
151	Brick Masonry	32	.20	.04	5/90	4/95

Table 3
Correlations Between NOCTI Written and Performance Exams 90-95 (Sorted by r & r2)

CODE	TEST TITLE	SAMPLE N	r	r2	1st DATE	LAST DATE
83	Auto Body Repair	40	.18	.03	4/90	7/92
214	Industrial Electrician	28	.18	.03	4/92	7/95
122	Cosmetology	33	.17	.03	3/90	5/92
155	Quantity Foods	77	.16	.03	4/90	7/93
211	Sheet Metal	6	.16	.03	3/92	7/95
4	Diesel Engine Repair	5	.16	.03	4/90	5/91
21	Welding	62	.15	.02	3/90	8/95
184	Scientific Data Processing	5	.13	.02	3/94	7/95
202	Auto Body Repair	53	.12	.01	3/90	7/95
255	Quantity Foods	41	.12	.01	11/93	8/95
120	Machine Trades	128	.12	.01	2/90	7/95
161	Electrical Construction & Maint.	35	.11	.01	4/90	7/95
135	Painting and Decorating	4	.08	.01	7/90	7/93
85	Microcomputer Repair	4	.07	.01	5/91	11/92
111	Sheet Metal	5	.07	.00	4/90	4/91
242	Building Construction Occupations	14	.06	.00	11/93	4/95
108	Electrical Installation	64	.03	.00	3/90	12/93
81	Child Care and Guidance	14	.01	.00	9/90	7/95
2	Auto Mechanics	1	.00	.00	8/92	8/92
8	Computer Science for Sec. Teach.	1	.00	.00	7/92	7/92
43	Refrigeration	1	.00	.00	7/92	7/92
46	Metal Fabrication	1	.00	.00	7/91	7/91
76	Industrial Technology	1	.00	.00	4/94	4/94
80	Computer Science	1	.00	.00	6/91	6/91
101	Airframe & power plant mech	1	.00	.00	1/95	1/95
109	Masonry	1	.00	.00	7/90	7/90
123	Mechanical Technology	1	.00	.00	6/91	6/91
131	Machine Drafting	1	.00	.00	5/91	5/91
133	Materials Handling	1	.00	.00	5/95	5/95
140	Tool and Die Making	1	.00	.00	7/90	7/90
160	Drafting Occupations	1	.00	.00	2/90	2/90
249	Audio-Visual Communications	1	.00	.00	4/95	4/95
222	Cosmetology	45	-.03	.00	4/92	8/95
84	Scientific Data Processing	10	-.04	.00	4/90	7/93
254	Masonry Occupations	7	-.15	.02	4/90	6/95
67	Building and Home Maintenance	12	-.19	.04	6/90	12/94
124	Cabinet Making & Millwork	52	-.28	.08	5/90	8/95
127	Appliance Repair	3	-.41	.17	3/90	4/91
48	Radio & T. V. Repair	2	-.80	.64	3/94	12/94
44	Heating	2	-1.00	1.00	12/92	11/93
121	Architectural Drafting	2	-1.00	1.00	7/90	5/92

References

Kapes, J.T. (1976, August). An evaluation of Pennsylvania trade competency written exams administered during 1975-76. Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational Education..

Kapes, J.T., & Funk, G.W. (1978, September). An evaluation of Pennsylvania occupational competency written exams administered during 1975-78. Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational Education.

Kapes, J. T., & Funk, G. W. (1981, August) Technical manual for the Pennsylvania occupational competency exams. Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational Education.

Kapes, J.T., & Welch, F.G. (1985, October). Review of the scoring procedure for the occupational competency assessment program in Pennsylvania. Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational Education.

Kapes, J. T., & Welch. F. G. (1986, June). Pennsylvania pass/fail cutoff tables for 1986 NOCTI teacher occupational competency tests. Unpublished manuscript.

Kapes, J. T., & Welch. F. G. (1990, July). Pennsylvania pass/fail cutoff tables for 1990 NOCTI teacher occupational competency tests. Unpublished manuscript.

Kapes, J. T. (1995, June). The development of pass/fail cutoff scores for NOCTI written and performance exams administered in Pennsylvania based on 1995 national norm data. Harrisburg, PA: Pennsylvania Department of Education, Bureau of Vocational Education.

Iowa State University (1991). Iowa vocational assessment system: Final report for fiscal year 1990-91 Ames, IA: Author. (ERIC Document Reproduction Service No. Ed 355362)

Purdue University (1990). Professional development for occupational specialists: Occupational competency testing (Final Report) West Lafayette, IN: Author. (ERIC Document Reproduction Service No. ED 333242)

Whitener, S. (1991, May). Examinations to assist military personnel moving into the civilian workforce. In N. Stacey, et al. Military cutbacks and the expanding role of educators: Proceedings of a conference. Washington D. C.: U. S. Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED 351535)

THE IMPACT OF BLOCK SCHEDULING ON INSTRUCTION, FFA AND SAE IN AGRICULTURAL EDUCATION

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Abstract

The purpose of this study was to examine the impact of block scheduling on teachers and agricultural education programs in North Carolina. Questionnaire were sent to the senior agricultural instructor in each department in the state. Responses were obtained from 68 percent. Approximately 75% of the NC schools are on block scheduling. Teachers generally have a positive attitude toward block scheduling. Block scheduling has resulted in an substantial increase in the number of agriculture students while number of students in the FFA has remained the same. Block scheduling has had little impact on the quality of the instruction, a slight negative impact on SAE, and a substantial negative impact on the FFA program. A variety of instructional techniques are needed and each class period needs to be broken up into segments. The communications, the entire structure and operating procedures for the FFA may need to re-examined.

Introduction

The publication of a Nation at Risk in 1983 triggered a plethora of educational reforms in the public schools. The reforms included increasing graduation requirements, establishing tech-prep programs, instituting site based management, integrating academic and vocational education, , and developing new approaches to instruction (Paideia and FAST science). One potential area for reform, which has received little attention until recently, is the structure of the school day.

The school day has remained static for the past 80 years. In 1909 the Carnegie Foundation for the Advancement of Teaching proposed the "Standard Unit" as the common measure of time spent on a specific subject in high school. This unit, commonly called the Carnegie Unit, calls for students to attend between five and six classes during the school day with each lasting 50 minutes. Even though there have been minor variations in the school day over the years in local schools, the Carnegie Unit still predominates (Maeroff, 1994). However, starting in the early 1990's, schools started experimenting with different approaches to scheduling the school day (Carroll, 1990). A common alternative is to break the school year into two semesters and schedule four classes of 90 minutes during each semester. Courses are completed in one semester instead of a year. In the literature this approach is commonly called block scheduling, alternative scheduling or the Copernican plan (Carroll, 1994).

Block scheduling is growing rapidly in North Carolina and in many other states. In 1992-93 only 1% of North Carolina public high schools used block scheduling . Block Scheduling is defined as " a scheduling system in schools in which students take four courses each semester, in 90 minute class periods, completing eight courses each year" (Averett, 1994). An agricultural education teacher's block schedule is illustrated in Table 1 and a student's in Table 2. During the 1994-95 school year, about 38% of the public high schools were on block schedules. It is estimated that 60% of the high schools in North Carolina are on block scheduling for the 1995-96 school year (Averett, 1994).

Table 1. Agricultural Educator's Class Schedule on Block Scheduling

TIME	SEMESTER I	SEMESTER II
7:50 - 9:15 a.m.	Biotechnology	Biotechnology
9:20 - 9:50 a.m.	Home Room	Home Room
9:55 - 11:20 a.m.	Horticulture I	Horticulture II
11:25 - 11:55 a.m.	Prep	Introduction to Agriscience
12:00 - 1:30 p.m.	Lunch I	Lunch I
1:35 - 3:00 p.m.	Introduction to Agriscience	Prep/Visits

Table 1. Agricultural Student's Class Schedule on Block Scheduling

TIME	SEMESTER I	SEMESTER II
7:50 - 9:15 a.m.	English I	History I
9:20 - 9:50 a.m.	Home Room/Advocacy	Home Room/Advocacy
9:55 - 11:20 a.m.	Horticulture I	Horticulture II
11:25 - 11:55 a.m.	Algebra I	Introduction to Ag
12:00 - 1:30 p.m.	Lunch	Lunch
1:35 - 3:00 p.m.	Elective/Band	Literature

Overall, the initial reaction to block scheduling appears to be positive (Jones, 1995). Carroll (1994) found that block scheduling decreased average class size, reduced teaching load, and substantially increased learning mastery. Hottenstein and Malatesta (1993) report that standardized scores increased greatly in their Pennsylvania school after implementing block scheduling. Guskey and Kifer (1995) found less discipline problems and significant increases in standardized scores of African American students in their Maryland school. They also report that 70% of the students and 95% of the faculty prefer the 4-period day. Schoenstein (1995) found that after block scheduling was implemented in a Colorado high school, student and staff stress was lower, daily attendance was up, and the number of students on the honor roll and attending college increased. Reid (1995) found that English students believe their writing had improved under the block schedule.

Most of the research on block scheduling has been school wide or on the teaching of a specific academic subject. There has been little research on the impact of block scheduling in agricultural education. Since agricultural education involves out-of-school experiential learning and has integral youth organization activities, the impact of block scheduling may be viewed differently. One of the most widely respected agriculture teachers in North Carolina says that block scheduling was the worst thing that had ever happened to him. Yet another teacher from a less prestigious program said block scheduling was the greatest thing that had happened to his program in years. Both views may be accurate or the reality of block scheduling may lie in between.There is some evidence that block scheduling is having an adverse affect on the operation of agricultural education programs. This research will document the impact of block scheduling on agricultural education and seek solutions for the problems that may be developing. The theoretical foundation for this research is the Hamlin Proposition. Hamlin (1966) asserted that the major reason research is conducted is to find a solution for a problem. This research did not seek to test some hypothetical theory. Instead it sought to document a perceived problem and then to seek solutions to help solve the problem.

Purpose and Objectives

The overall purpose of this research was to conduct an in-depth study of the impact of block scheduling on agricultural education and to determine identify exemplary strategies that could be used by other agriculture teachers in block schedules. This research study had three major objectives:

1. To document the impact that block scheduling is having on the conduct of the complete agricultural education program.
2. To identify the attitudes of agriculture teachers toward block scheduling.

3. To identify "strategies that work" in instruction, FFA and SAE in schools where block scheduling is used.

Procedures

Instrument

A survey instrument was sent to the senior agricultural teacher in every secondary agricultural department in the state (N=222). The instrument assessed the teachers' attitudes toward block scheduling and identified the impact of block scheduling on the FFA, SAE and instructional programs in their schools. Five questions were used to describe the program before and after block scheduling. The questions revolved around course enrollments, FFA membership, instructional program quality, FFA program quality and SAE program quality.

An attitude score was calculated from responses to a 28 item attitude scale which was completed by the respondents. A Likert-type response scale was used with a 1 being strongly disagree and 5 being strongly agree. The responses were summed and averaged to give a mean attitude score. The scoring of the items on the instrument that were worded negatively were reversed in calculating the mean attitude scores.

In an open ended section of the instrument, teachers were asked to identify what they are doing differently in regards to instruction, FFA and SAE and to assess the effectiveness of these practices. This instrument was developed by the researchers and then field tested in Virginia. Based upon the field test, one modification was made in the instrument. A Cronbach's Alpha was calculated on the attitude portion of the instrument and resulted in a reliability estimate of .92.

Data Collection

The survey was mailed to the teachers in May of 1995. A follow-up administration of the instrument was given during the state agricultural teachers conference. A total of 141 teachers responses were obtained for a response rate of 64%. A comparison of early and late respondents yielded no significant differences. Therefore, since late respondents are similar to non-respondents, no further follow-up procedures were conducted and the researchers assumed that the data were generalizable to the study population (Miller & Smith, 1983).

Data Analysis

Both quantitative and qualitative techniques were used in analyzing the data. The data amenable to quantitative analysis were placed in an Excel spreadsheet and various statistical functions were employed. The qualitative data were examined and summarized by the researcher.

Results

Current Status of Block Scheduling in North Carolina

The data were collected in the spring and summer of 1995. At that point in time 34 (24%) of the schools were not on block schedules and had no immediate plans to do so. Forty-four (33%) schools were not on block schedule but planned to do so in the near future. Sixty-three (45%) of the schools were on block schedules. Counting the schools on block schedules and those planning to do so, about 3/4 of the schools represented in this research are expected to be on block schedules in the 1995-96 school year. This information in graphically presented in Figure 1.

Figure 1 Block Schedule Status of Schools

Of the 63 schools on block schedules, 45 were in their first year of operation. Fifteen schools were in their second year of block scheduling and two schools had been on block schedules three or more years. Of the 63 schools on block schedules, 59 were using the 4 x 4 schedule. The other schools were using the Alternate Day (AB) schedule or some variation of the Alternate Day schedule.

Research Questions

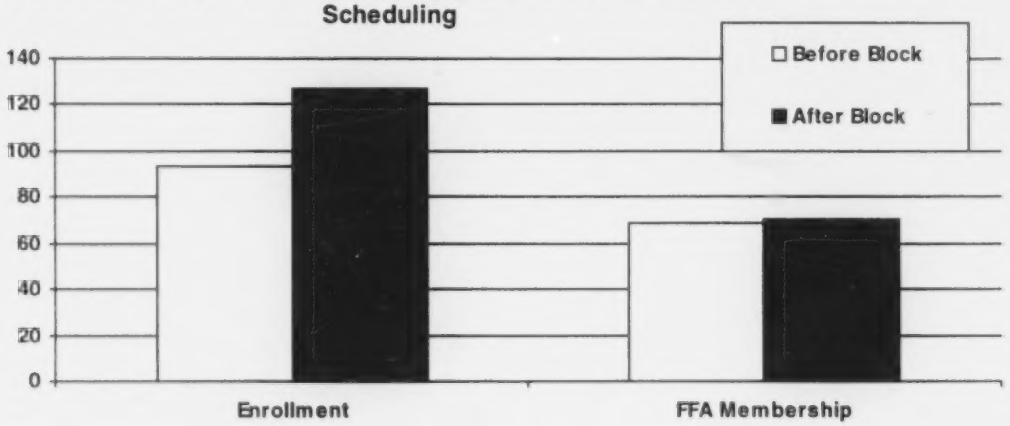
The **first research objective** was to document the impact that block scheduling was having on the conduct of the complete agricultural education program. Five questions were used to answer this question. These questions revolved around course enrollments, FFA membership, instructional program quality, FFA program quality and SAE program quality.

Enrollment in agricultural courses has increased substantially after the implementation of block scheduling. The mean number of students enrolled in agricultural courses prior to block scheduling was 93.2 students per school. After block scheduling was enacted, the

average enrollment rose to 126.6. This is an increase of 33 students per program. For agricultural education programs with low enrollments, block scheduling may be a solution. These data are graphically presented in Figure 2.

While enrollments in agriculture increased as a result of block scheduling, membership in the FFA did not. The average FFA membership per school prior to block scheduling was 68.4. After the implementation of block scheduling, the average membership was 70.4. The increased number of students who are taking agriculture are not showing up on the FFA membership roles. These data are also presented in Figure 2.

Figure 2 Enrollments and FFA Membership Prior to and After Block Scheduling



Teachers were asked to rate the overall quality of the instructional program, FFA program and SAE program prior to and after the implementation of block scheduling. A 10 point Likert-type scale was used with 10 being excellent and 1 being poor. The rating of the instructional program was 7.4 prior to block scheduling and 7.53 after block scheduling. The teachers did not believe block scheduling had any much impact on the quality of their instructional program. These data are shown in Figure 3.

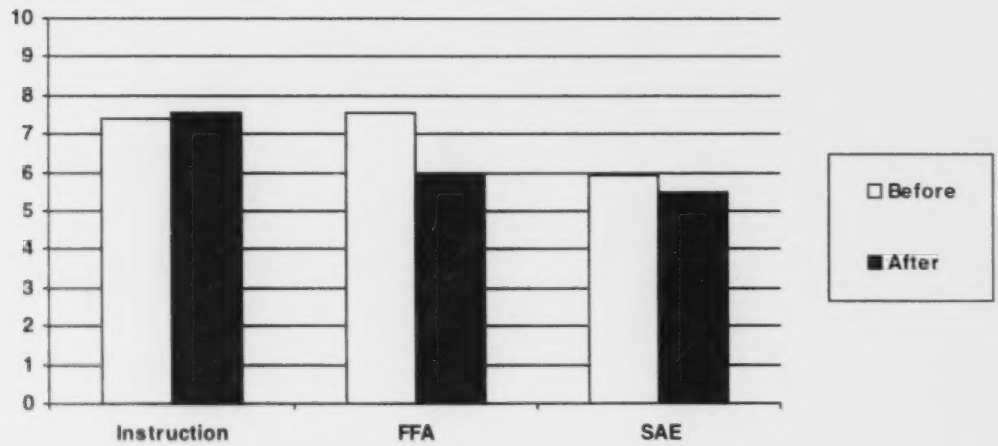
The item with the greatest change in relative scores was the FFA program. Prior to block scheduling the teachers rated their FFA program at 7.53. After block scheduling this had dropped to 5.95, a decline of nearly two points on a 10 point scale. Teachers believe block scheduling is having a negative impact on the FFA program. These data are shown in Figure 3.

There was a slight decline in scores on the SAE component of the program prior to and after block scheduling. The mean score prior to block scheduling was 5.95. The mean score was 5.49 after block scheduling. Research by Clary over 20 years ago identified SAE as being

weak in North Carolina. These data tend to reveal SAE is still a weak component of the program, both before and after block scheduling. These data are shown in Figure 3.

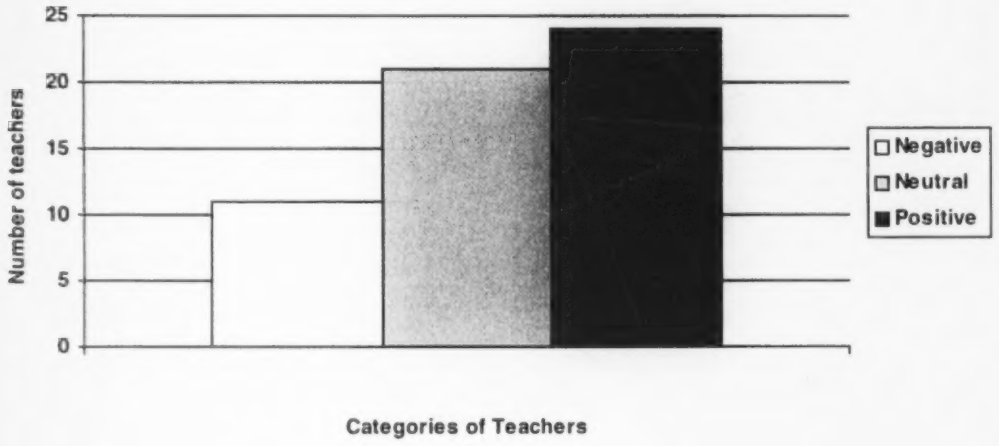
There were more teachers (N=24) with a positive attitude (M>3.25) toward block scheduling than teachers (N=11) with a negative attitude (M<2.75). Twenty-four teachers were classified as having a neutral or undecided attitude (M=2.76-3.24) (see Table 3).

Figure 3 Program Quality Prior To and After Block Scheduling



The **second research objective** was to identify the attitudes of agriculture teachers toward block scheduling. An attitude score was calculated from responses to a 28 item attitude scale which was completed by the respondents. A Likert-type response scale was used with a 1 being strongly disagree and 5 being strongly agree. The responses were summed and averaged to give a mean attitude score. The scoring of the items on the instrument that were worded negatively were reversed in calculating the mean attitude scores. The overall mean attitude score was 3.22 on a 5 point scale. This score falls in the undecided range. The range of scores was from a mean of 4.1 to 2.25. A 4.1 score is "agree" and a 2.25 is near "disagree". Because the mean attitude score was near the midpoint of the scale, it was decided to divide the teachers into three attitude groups to get a better understanding of the attitudes of the teachers. Mean attitude scores above 3.25 were considered positive and mean attitude scores below 2.75 were classified as being negative. Scores falling in between were considered neutral. Attitude scores were calculated only on teachers who had been in the block schedule. The array of attitude scores is shown in Figure 4.

Figure 4 Overall Attitude of Teachers Toward Block Scheduling



Responses to specific items on the attitude scale were examined to see which items might merit special attention. Six attitude statements had mean ratings of 4.0 or higher. These statements were: Labs can be utilized more effectively under block scheduling (M=4.44), It is more difficult to operate the FFA program since we implemented block scheduling (M=4.13), Enrollment in Ag Ed classes has increased since we implemented block scheduling (M= 4.02), I have had to change my ways of teaching since we implemented block scheduling (M=4.02), I personally like block scheduling (M=4.00), and I have more planning time (M=4.00).

There were six attitude items that had mean scores below 2.5 Teachers were in disagreement with the following statements: I have difficulty maintaining student interest for the entire period since we implemented block scheduling (M=2.48), It is easier to cover all of the competencies outlined in the course description under block scheduling (M=2.47), It is easier to develop a FFA Program of Activities under block scheduling (M=2.33), I have had more discipline problems in my class since we implemented block scheduling (M=2.30), Attendance for FFA chapter meetings has increased since block scheduling (M=2.25) and I would prefer to return to a more traditional schedule (M=2.18). The teachers' responses to all attitude statements are found in Table 3.

Table 3 Attitudes of teachers toward block scheduling

Attitude Statements	All Teachers[1]	Positive Teachers	Negative Teachers
Labs can be utilized more effectively under block scheduling.	4.44	4.76	3.9
It is more difficult to operate the FFA program since we implemented block scheduling.	4.13	3.30	4.36
Enrollment in Ag Ed classes has increased since we implemented block scheduling.	4.02	4.21	3.91
I have had to change my ways of teaching since we implemented block scheduling.	4.02	4.04	4.09
I personally like block scheduling.	4.00	4.66	2.73
I have more planning time.	4.00	4.24	3.18
Block scheduling has been successful in my school.	3.83	4.29	3.00
Coordinating SAE visits are difficult when students are not in class.	3.75	3.50	4.18
It is more difficult to prepare contest teams since we implemented block scheduling.	3.70	3.28	4.36
Most of my students like block scheduling.	3.70	4.18	2.82
I believe block scheduling is a better way to organize school time.	3.63	4.17	2.36
Students can focus better under block scheduling because they have fewer courses.	3.47	4.07	2.18
Higher quality students are now joining the FFA.	3.23	3.64	2.72
My students are learning more since we implemented block scheduling.	3.22	3.68	2.27
It is easier to teach SAE record keeping with the longer class periods.	3.21	3.59	2.55
Student achievement has improved with block scheduling.	3.20	3.55	2.10
The quality of the students in the program has improved since we implemented block scheduling.	3.16	3.62	2.45
Students have difficulty sitting through the longer periods of block scheduling.	3.12	2.32	3.82
It is more difficult for students to have a SAE program with block scheduling.	3.02	2.48	3.55
Block scheduling allows students to have different types of SAE Programs.	2.85	3.11	2.45
I worry that students don't learn as much as they did under a traditional schedule.	2.80	2.32	3.82
More students are showing interest in the SAE program under block scheduling.	2.57	2.93	2.09
I have difficulty maintaining student interest for the entire period since we implemented block scheduling.	2.48	1.93	3.18
It is easier to cover all of the competencies outlined in the course description under block scheduling.	2.47	3.11	1.45
It is easier to develop a FFA Program of Activities under block scheduling.	2.33	2.82	1.64
I have had more discipline problems in my class since we implemented block scheduling.	2.30	1.73	2.82
Attendance for FFA chapter meetings has increased since block scheduling.	2.25	2.62	1.91
I would prefer to return to a more traditional schedule.	2.18	1.55	3.55

[1]The rating scale was 1 Strongly Disagree, 2 Disagree, 3 Undecided, 4 Agree and 5 Strongly Agree

The **third research objective** was to identify "strategies that work" in instruction, FFA and SAE in schools where block scheduling is in operation. An open ended question was used to elicit the responses to this question. Most people made the same points repeatedly. The major points made by the respondents are summarized as follows:

- Break up each period with different activities. Spend part of the time doing class work followed by a practical activity or laboratory work. Some teachers recommend 1/2 of the time on class work and 1/2 the time on practical work while other teachers suggest dividing the class into three 30 minute segments with a different type of activity in each segment. Increase "hands on" activities.
- Use a wide variety of teaching methods. Methods mentioned included lecture, board work, seat work, small groups, teams, peer teaching, cooperative learning, video, field trips, visiting speakers, team teaching, and use of labs.
- Provide a brief break half way through the period.
- Publish a FFA newsletter or use bulletin boards to keep members informed of FFA activities. Some type of communication device will be needed to keep the FFA functioning.
- Teach the introductory or first level courses in the fall.
- Have plenty of officer meetings.
- Be ready to try different things.
- Prepare thoroughly for class. Use the VOCATS (state list of competencies to be taught in each course) blueprints to plan lessons.

A number of points (not suggestions) were made by the teachers and some questions were raised. These comments are as follows:

- How do you get students enrolled in agricultural education class for the second semester to pay FFA dues during the first semester? How do you maintain contact with students who were in agricultural education the first semester but not the second? Students may not want to pay dues during the second semester because they think they will get only half the benefits.
- The VOCATS system needs to be revised to reflect 135 hours of instruction instead of 180.
- Field trips (including club activities) are harder to get approved. Students are missing more information if they are gone for a day.
- There is not enough time for FFA activities. It is difficult to prepare for contest and events. The FFA will need to be altered.
- Budgets for supplies and materials need to be increased. You are teaching two years of courses in one year. There is an increase number of students.
- Some biotechnology laboratories need to meet every day.
- Students may meet all graduation requirements by the junior year and not put much effort into classes the remainder of the time.

Conclusions and/or Recommendations

Agriculture teachers in North Carolina generally have a positive attitude toward block scheduling. The majority of the teachers who are on block schedules prefer to remain on block schedules. However, block scheduling is having an impact on the operation of the agricultural education program, particularly the delivery of traditional FFA activities. Block scheduling is resulting in increased number of students enrolling in agricultural education. Teachers are having to plan more carefully and use a variety of teaching methods. This is not creating a major problem for teachers. It is recommended that teachers:

- Use a variety of teaching methods in each class period. Divide each class period into halves or thirds and use different teaching methods in each segment.
- Prepare thoroughly for each class.
- Provide a brief break half way through the period.

Teacher education programs may need to conduct in-service refresher courses on teaching methodologies for the teachers.

This research found that SAE is a weak component of the agricultural education program. It was weak before block scheduling and continues to be weak. If agricultural educators believe SAE is important, this problem needs to be addressed.

Block scheduling is causing problems in the operation of the FFA program. The increased number of students taking agricultural education are not joining the FFA. It is harder to maintain FFA membership, communicate with FFA members, prepare career development teams, work with the FFA officers, and operate the other components of the FFA program. Changes will need to be made in the FFA program. Based upon the written responses and interviews, it is recommended that teachers:

- Work hard at communicating the FFA program. Publish a FFA newsletter or use bulletin boards to keep members informed of FFA activities.
- Consider establishing and operating satellite FFA chapters. The umbrella FFA chapter concept may need to be revisited. The state leadership for agricultural education and FFA may need to take the lead in instituting state wide changes in the operation of the FFA program. Some of the problems encountered in operating local FFA chapters are a result of state deadlines and procedures. The organization and operation of the FFA at the state level needs to be completely rethought. Some possible changes might include:

The state leadership for agricultural education and FFA may need to take the lead in instituting state wide changes in the operation of the FFA program. Some of the problems encountered in operating local FFA chapters are a result of state deadlines and procedures.

The organization and operation of the FFA at the state level needs to be completely re-thought. Some possible changes might include:

- Collect and submit FFA dues twice per year, once in the fall and once in the spring.
- For years the FFA has operated on a school or calendar year paradigm. It is time to critically challenge that paradigm. Some career development events may have to be held twice during the year, once in the fall and once during the spring. If the purpose of the career development events is to provide motivation for students and reinforce what is being taught, then it would be logical to hold career development events to coincide with how the instructional program operates in schools. The instructional program should drive the career development events, and not the other way around.
- FFA chapters may want to consider having a fall set of officers and a spring set of officers. If one of the goals of the FFA is to develop leadership, then having two sets of officers during the year instead of one set of officers would further contribute to that goal. FFA chapters may want to consider having a fall set of officers and a spring set of officers. If one of the goals of the FFA is to develop leadership, then having two sets of officers during the year instead of one set of officers would further contribute to that goal.

Referenes

Arnett, C. (1994). Block scheduling in North Carolina high schools. Division of Innovation and Development Services. North Carolina Department of Public Instruction.

Carroll, J. (1990). The Copernican plan: Restructuring the American high school. Phi Delta Kappan, 71 (5) 358-365.

Carroll, J. M. (1994). Organizing time to support learning. School Administrator. 51 (3), 26-28, 30-33.

Carroll, J. (1994). The Copernican plan evaluated, The evolution of a revolution. Phi Delta Kappan. 76 (2) 104-113.

Guskey, Thomas & Kifer, Edward (1995). Evaluation of a high school block schedule restructuring program. ERIC Document ED 384652.

Hamlin, H. M. (1966). What is research? American Vocational Journal, 41 (6), 14-16.

Hottenstein, David & Malatesta, Constance (1993). Putting a school into gear with intensive scheduling. High School Magazine. 1 (2), 28-29.

Jones, Rebecca (1995). Wake up! Executive Educator. 17 (8). 14-18.

Maeroff, G. (1994). The assault on the Carnegie Unit. NCA Quarterly, 68 (3) 408-411.

Miller, L.E. & Smith, K. L. (1983). Handling nonresponse issues. Journal of Extension, 21, pp. 45-50.

Reid, Louann (1995). Perceived effects of block scheduling on the teaching of English. ERIC Document 382950.

Schoenstein, Robert. (1995). The new school on the block. Executive Educator. 17 (8), 18-21.

EMPLOYER INVOLVEMENT IN GEORGIA YOUTH APPRENTICESHIP PROGRAMS

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Abstract

Employers are expected to be and must be full partners in the organization and operation of a youth apprenticeship program. These firms hiring youth apprentices are responsible for providing the work-based learning component of the program, yet little is known about employers who participate in the youth apprenticeship program. This study was designed to provide insight on employer participation in youth apprenticeship programs that offer work experience and learning at the work site.

Introduction

Almost all major education reform proposals of the 1980s used, as part of their rationale, the need for America to compete effectively in the international market place by preparing highly qualified workers. Yet, none of the those proposals was centered on the goal of relating education and work more effectively.

With publication of America's Choice: High Skills or Low Wages (Commission on the Skills of the American Workforce, 1990), education was challenged to change its structure and operations. The basic reasoning behind this reform lies in the difficulties recent high school graduates seeking to enter the labor market have in making the transition from schooling to employment contrasted with their counterparts in other industrialized nations (U.S. General Accounting Office, 1991; America's Choice: High Skills or Low Wages, 1990). In the School-to-Work Connection (1990), Marc Tucker, President of the National Center on Education and the Economy, is quoted as saying "The U.S. system for transitioning from school-to-work is the worst in the industrialized world."

Recently enacted federal legislation, the School-to-Work Opportunities Act of 1994, has responded to these concerns. This legislation offers states and localities great latitude in designing systems to connect school-to-work. Work-based learning is a centerpiece of this educational reform legislation and more specifically youth apprenticeship programs are seen as an important program in linking school-based and work-based education.

Inspired by Germany's "dual system," which places more than 60 percent of 16-year olds in the workplaces to learn a trade, youth apprenticeships have been established in more than a dozen states, and in many states legislated. Typically, youth apprentices would make a three-to-four year commitment to a career area and an employer spanning the last two years of high school and the following two years. Their hours on-the-job might rise from twenty per week in year one to full time in year four, and they would be paid. Teachers and employers would teach basic skills using workplace applications and specific technical skills of an industry. Students would graduate with a high school diploma, significant work experience, academic credits toward an associate degree and a skills certificate within a specific industry.

In 1992, the governor initiated and the Georgia General Assembly passed legislation establishing the legal basis for developing youth apprenticeship programs in the state. The legislation directed the Georgia Department of Education to develop policies, procedures and standards necessary to implement the program for all state school systems by 1996. The legislation further provides for collaborative relationships in developing this program with the Georgia Departments of Labor and Technical and Adult Education.

Youth apprenticeship offers students both school-based and work-based educational experiences. It combines structured, paid work and training on-the-job with related classroom instruction. The emphasis is on contextual, real-world learning through workplace experiences.

Effective youth apprenticeship programs require extensive coordination between employers, schools, labor, and government because of its high academic standards and high-skill career opportunities. Some of the defining characteristics of youth apprenticeship are:

- employers active participation;
- integration of work-based and school based learning;
- integration of academic and vocational learning;
- secondary and post secondary linkages; and
- award of an occupational skill certificate.

To build an effective youth apprenticeship program, the involvement of employers is essential. Employers are responsible for creating a program of structured workplace learning that includes workplace mentoring, instruction in general workplace competencies, and broad instruction in different aspect of a particular industry.

Procedures

Employers are expected to be and must be full partners in the organization and operation of a youth apprenticeship program. These firms hiring youth apprentices are responsible for providing the work-based learning component of the program, yet little is known about employers who participate in the youth apprenticeship program. This study was designed to provide insight on employer participation in youth apprenticeship programs that offer work experience and learning on the work site.

Little information is available on firms that are participating in youth apprenticeship programs within the state. A review of past research and literature that focused on issues surrounding employer participation in work-based learning programs was limited.

An advisory group composed of five youth apprenticeship coordinators provided guidance on the development of the survey instrument used in this study. The basic questions examined were: (1) What are the characteristics of participating employers? (2) What factors impact an employer's decision to participate? (3) What are the benefits to the employer for participating? and (4) What is their role in developing work-based learning experiences for students? Upon completion of the development of the survey instrument, a pretest survey was conducted and then necessary modifications were made to the survey instrument.

A total of 54 secondary schools are engaged in various stages of implementing a youth apprenticeship program within the state. Each school site was asked to provide a listing of participating employers who could be included in the survey sample. A listing of 450 employers was provided. The study was based on a random sample of 206 employers. To obtain this sample, the names of all employers were put into an alphabetical list. The names on this list were then assigned consecutive numbers. By the use of a randomized sample table the sample was selected.

An introductory letter, explaining the purpose of the survey and soliciting participation, was mailed to each employer in the sample. Survey instruments were mailed during the month of January 1996. One hundred twenty-one of the 206 survey instruments were returned after the initial mailing and a follow-up procedure, yielding a return rate of 59 percent.

Results

The returned surveys were coded, checked for accuracy and entered into a data base for analysis. In this study descriptive statistics and theme-content analysis were utilized.

Characteristics of Participating Employers

Employers were asked to provide a descriptive information concerning their business to establish a profile of the participating businesses. Four areas of business and industry accounted for over half of the population. Administrative and social services business (17.36% each), health service (16.53%) and mechanical (13.22%). The remaining employers were spread over a variety of industry areas.

Employers of all sizes and structures participated in this study. The number of full-time workers employed in the businesses ranged from 4,000 to 0 with an average of 234 and part-time employees ranged from 250 to 0 with an average of 12. Businesses were classified in their structure as "part of corporation that includes more than one operating unit of the same type of business" (32.2%); "the sole operating unit in a corporation" (19 %); "family owned" and "privately owned" (14.9% each); with the remaining business classified as either "part of a conglomerate that includes more than one facility and more than one type of business" (8.3%); or a "local education agency" (9.1%).

As part of the survey, employers were asked about annual changes in employment levels. The vast majority of employers(69.4%) reported less than 10% annual employee turnover rate; and just less than half (47.1%) noted an annual employee turnover rate of less than 5%.

Participating businesses employed an average of two youth apprentices and paid the students an average hourly rate of $5.18 which is above the minimum wage rate. The range of hourly rate was from $3.00 to $10.00. A large number of employers (62.8%) have established a graduated pay increase for youth apprenticeship students. Graduated pay increases were provided students for the knowledge and performance on the job as well as for the length of time with the business. A small number of businesses (6.65%) did not remunerate the youth apprentices for their work-based learning. All of the businesses falling into this category were either in the health or social services industry areas.

When queried as to the reasons why the business or industry does not expand its involvement in the youth apprenticeship, a large majority of the employers (61.98%) cited that there is not enough work to take on additional employees. Issues that are frequently raised about expansion of the youth apprenticeship program--child labor laws and health and safety laws--were of concern to relatively few employers.

A majority of the business and industries in the sample reported that there were not involved with any other capacity of the youth apprenticeship program or the school. Of those who had other involvement, the most frequently mentioned (n=21) was that as being a participant on the advisory group or committee for the youth apprenticeship program.

Employers' Decision to Participate

A majority of employers (71.9%) were involved with the youth apprenticeship program for the first time. The two predominate reasons why employers participated in the program are to perform a community service and to recruit skilled employees for the future.

Student productivity on the job was cited by a vast majority of employers (80.17%) as the reason they would continue to participate in the youth apprenticeship program. When considering costs of hiring youth apprenticeship students compared with their productivity, employers reported that they either break about even (57%) or make money (29.8%). Youth apprenticeship students averaged nineteen hours per week at the work site.

Role in Work-Based Learning

School supervised work-based learning is characterized by identified quality control factors that differentiate it from work experience. Quality control factors that apply to work-based learning are training agreements, training plans, workplace mentors, rotation of students to different positions or tasks, a formal method of evaluation of the students' work performance, and regular workplace visits by the coordinator.

Employers reported that a workplace mentor had been assigned to the youth apprentices (85.95%); that students were rotated through different positions or tasks periodically (71.07%); and there was a formal method for evaluating the student's work performance for the school (75.21%). Responses from the employer sample indicated that there was less attention paid to the signing of training agreements between the school and employer (44.63%) which outlined the specific responsibilities of each party and that approximately half of the employers and schools had developed a training plan for the youth apprentices (51.24%) detailing the specific tasks that a student would be engaged in at the workplace.

Responses from the employer sample related that the youth apprenticeship coordinator visited the work site less than once per month (69.4%). Although there was a low visitation rate by the youth apprenticeship coordinators, an overwhelming majority of the employers where satisfied with the process for resolving problems that may arise with a youth apprenticeship student's work performance or behavior (96.7%).

Conclusions

The information gathered from the employers in this sample provides a starting point about how youth apprenticeship and other work-based learning programs operate and how they are perceived by employers. Many of the findings from this study confirm the 1994 research of the National Center for the Educational Quality of the Workforce (EQW).

Specifically the conclusions from this study include:

- employers are satisfied with the quality of students in the youth apprenticeship program and believe that they are productive workers that are contributing to the business.
- employers commit to participating in the youth apprenticeship program as a community service, but there is also a persuasive belief that recruitment of a skilled workforce for the future is another motivation for participation.
- employers cited that the lack of enough work is a major reason that they were unable to expand their participation in the youth apprenticeship program and that prevailing issues such as child labor and health and safety were not affecting their decision to expand support.
- employers are active in engaging the students in the workplace by providing mentors and a rotation of jobs or duties; but the schools seem to be less effective in integrating the school-based portion of the program with the work-based through the use of training agreements and training plans.

A majority of the youth apprenticeship programs in Georgia have been in operation less than two years and it may be too early to draw major conclusions about large-scale employee involvement in these programs based on their relatively short life-span. But as the programs develop and mature, employer-focused issues should be documented.

References

Commission on the Skills of the American Workforce. (1990). America's choice: High skills or low wages. Rochester, NY: National Center on Education and the Economy.

Lynn, I. and J. Willis (1994). School lessons, work lessons: Recruiting and sustaining employer involvement in school-to-work programs. Philadelphia, PA: National Center for the Educational Quality of the Workforce.

103rd Congress. (1994, May). School-to-Work Opportunities Act of 1994 H.R. 2884.

U.S. General Accounting Office (1991). Transition from school to work: Linking education and worksite training. Washington, DC: Author.

Youth Apprenticeship Program, Georgia Legislative Code 191, ss20-2-161.2 (1992).

BENCHMARKING YOUTH APPRENTICESHIP PROGRAMS IN GEORGIA

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Abstract

The purpose of this study was to improve the quality of youth apprenticeship activities by identifying and validating a benchmarking system leading toward the establishment of a set of common, valued quality components and indicators for use by local school districts, consortia, and state agencies in their development of youth apprenticeship programs. The final product from this study is a self-assessment instrument beneficial in guiding and enhancing the nature and level of implementation of youth apprenticeship practices in local schools.

Introduction

The Georgia Department of Education, in cooperation with the Departments of Labor and Technical and Adult Education, has initiated an important component in the development of a school-to-work transition system for the state. The development of youth apprenticeship programs offers students both school-based and work-based educational experiences. It combines structured, paid work and training on-the-job with related classroom instruction. The emphasis is on contextual, real-world learning through workplace experiencés. A youth apprenticeship program is expected to have several specific outcomes for students. These outcomes include:

- graduation from high school;
- completion of a related post secondary credential (either a certificate or an associate's degree, or a clear statement of the necessary credit remaining to qualify for a credential);
- documentation of occupational or industry-specific competencies, as certified by employers and educational institutions;
- a skill certificate that is an industry-recognized credential and verifies that a student has mastered specific academic and occupational skills (Youth Apprenticeship Program, 1992).

To address the program improvement needs of a local initiative in youth apprenticeship, tools and a process to analyze youth apprenticeship programs through component practices and locally collected data has been identified as a specific need. The process identified in this project allows the local school district to (1) develop a set of local benchmark measures to be collected and used by individual schools for program improvement; and (2) align a set of performance measures collected locally and reported to the state agency for state-level accountability and monitoring purposes.

Purposes and Objectives

The fundamental premise of this project is to improve the quality of youth apprenticeship activities by identifying and validating a benchmarking system leading toward the establishment of a set of common, valued quality components and indicators for use by local school districts, consortia, and state agencies in their development of youth apprenticeship programs. The objectives for the project were:

- validate existing youth apprenticeship performance measures;
- validate the existing "quality components" which make up the goals for youth apprenticeship;
- develop an understanding of youth apprenticeship implementation in local school districts; and
- establish a benchmarking system to assist secondary schools and post secondary institutions in program improvement.

A benchmark is a standard of excellence or achievement used to compare and measure similar things. The benchmarking process, originally developed by business, is a systematic and ongoing process of analyzing and comparing practices and processes for the purpose of continuous program improvement (Spendolini, 1992). It is a new technique for identifying measurable successes of others applying them to one's own organization. The benchmarking process compares an organization's practices, processes and outcomes to standards of excellence in a systematic way. It is a process that can also be used to design a new system or model.

Procedures

The initial step of this project was to analyze recent studies and literature pertaining to relevant school-, work-, and student-based quality indicators for youth apprenticeship and school-to-work systems. Next, an examination of other federal and state evaluation, assessment, and performance reporting systems related to youth apprenticeship and school-to-work programs was conducted in order to determine commonality, duplication, gaps, and quality of existing data. Subsequently, a series of integrated focus groups and surveys were conducted involving a Youth Apprenticeship Leadership Group composed of local Youth Apprenticeship Coordinators, local Youth Apprenticeship Consortia

members, business and industry representatives and other participants to determine the stakeholders' views on the quality, utility and propriety of the current quality and performance measures. These focus groups identified additional needed components and indicators, as well as limitations to data collection. The information gathered in the early phases of this project were then used as a foundation for developing the components, the self-assessment and the data collection instruments.

In order to validate the benchmarking model developed in this project a pilot site study was conducted. The benchmarking instrument and processes developed under this project were pilot tested with four local secondary schools and associated post secondary technical institution. Confidentiality was guaranteed to the participants in order to promote a high level of involvement in the process and candor in discussing youth apprenticeship and school-specific information. Therefore, neither the schools' nor the team members' identities are included in the final report.

The pilot site study had two purposes: (1) to observe and gather information about local youth apprenticeship practices and implementation levels; and (2) to test and refine the benchmarking process for local program improvement. The pilot site study consisted of two site visits and a networking session. In addition, pilot site personnel were asked to collect data on the implementation of youth apprenticeship in their school.

Analysis of Data

Based on the review of the literature, focus groups, and surveys 128 benchmark standards for a youth apprenticeship program were identified and validated through the pilot study. The benchmark standards were then organized into ten topical areas incorporating each standard. The topical areas and number of standards under each topic are: Philosophy and Purpose (14 standards), Organization and Administration (24 standards), School-Based Learning (26 standards), Work-Based Learning (17 standards), Articulation (7 standards), Instructional Faculty (11 standards), Financial Resources (6 standards), Program Marketing (8 standards), Program Steering Committee (8 standards), and Evaluation (7 standards).

Conclusions

The final product from this study is a self-assessment instrument beneficial in guiding and enhancing the nature and level of implementation of youth apprenticeship practices in local schools. The use of self-assessment and data collection instruments and processes that are aligned with performance measures give local practitioners' ownership of much of the data collected in their school.

Benchmarking holds great promise as a method for improving local youth apprenticeship programs. Benchmarks provide a consistent way for schools to understand and document

their local implementation of youth apprenticeship. For local practitioners, developing the ability to use benchmarking will require an expansion of their capacity to collect and manage data, as well as professional development in the collection, interpretation, and use of data. The benchmarking system, with its capacity to increase understanding of data and to effectively collect that data on specific practices, provides an ideal foundation for a large-scale examination of the efficacy of youth apprenticeship programs in the state.

References

Spendolini, M. (1992). The benchmarking book. New York: American Management Association.

Youth Apprenticeship Program, Georgia Legislative Code 1981, ss20-2-161.2 (1992).

STUDENT PERCEPTIONS TOWARD EFFECTIVENESS OF DISTANCE EDUCATION

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Abstract

Electronic technologies that facilitate distance learning with interactive video network (IVN) or interactive television network (ITV) offer promise in these two areas. This study identifies perceptions of students in IVN/ITV courses with respect to the educational quality of the courses offered and their satisfaction with the educational experiences in the distance learning programs. Students were satisfied with the quality of IVN/ITV, believed these courses lived up to their expectations, as well as the expectations of their parents, and that the experience will benefit them in the future. Students believe they do as well in IVN/ITV classes as in a traditional classroom. Students believe that IVN/ITV is an effective way to teach courses in small rural schools where geographic location, adequate funding, and student enrollment are limiting factors.

Introduction

Equity and access in education are major issues in rural and urban schools. Electronic technologies that facilitate distance learning with interactive video network (IVN) or interactive television network (ITV) offer promise in these two areas. Tift (1989) commented that Technology-based education is maintaining the viability of small, rural schools through equitable access to a quality education by all students. Some of the underlying factors as noted by Barker (1990) include teacher availability, low student enrollments, and geographic location.

The literature favors the effectiveness of this technology as an instructional delivery method. "Well-designed distance education programs are equally effective in terms of learner outcomes with resident instruction, in general, and produce superior learning outcomes in specific applications" (Kelly, 1993, p. 76). An analysis of published reports found extensive evidence that courses delivered by a teacher at a distance were equally effective as those with the teacher in the classroom. One limitation, however, is the effectiveness of distance education for some students who need direct interaction with a classroom instructor and with other students (Schmidt and Faulkner, 1989). Students who select courses taught through the IVN/ITV systems are more likely to be self motivated and higher achievers. These students are the ones who typically have positive educational outcomes (Schrum, 1991). Thus, while there is some controversy, experts in distance education believe it can be as effective an educational mode as traditional methods.

Distance, technology and education have been linked for many purposes in a variety of venues. Distance education has been provided to teachers using a variety of hardware and software; however, as data transmission has evolved and become more affordable, distance education classes have become more and more interactive. Barker, Frisbie, and Patrick (1989) considered the wide range of "distance education" delivery systems. More recently, researchers such as Charron and Obbink (1993) have described the variety of techniques that they believe facilitates distance learning. Swan and Jackman (1995) outlined several teaching models appropriate for delivering instruction at a distance. In addition to describing distance education technology, many authors have outlined procedures which can be used to craft classes utilizing varied distance education technologies (Brinkley, Pavlechko, and Thompson, 1991; Swan, 1996).

A review of the literature indicates that numerous professional education courses and inservices (Rule & Stowitschenk, 1991) have been delivered to veteran teachers using distance education. Many teacher related courses have been directed toward the needs of rural educators (Chow, 1989, Swan, 1993). Although much work has been conducted with rural teachers, little seems to have been done with students in either rural or urban settings.

Quantitative and qualitative evaluation techniques have proven to be important tools by which distance education can be improved and researched. The evaluations that have been reported in the literature are vary. This is in part due to length of the evaluation, age of students, class topics, and specific technologies utilized (Grimes, Krehbiel, Nielson, & Niss, 1989).

Some long-term evaluations have been conducted by those involved in distance education. Jackman and Swan (1994) evaluated graduate level students and their understanding of teaching models used in effective distance education programs. Others have attempted major studies which have addressed the effectiveness of distance education by evaluating previously published studies (McNeil & Nelson, 1991).

Some specific reports regarding education students enrolled in distance education courses have appeared in the literature. In 1989, Beare explored the effectiveness of different distance education delivery systems by utilizing measures of student achievement and course evaluation and comparing these data to measures from more traditional instructional environments. Swan and Brehmer (1994) reported on perceptions of secondary educators and administrators toward instruction delivered via two-way interactive video networks.

Although much of the research seems to center on courses developed for inservice and graduate students in education, some studies have included components emphasizing programs for elementary and secondary education (Shapiro, Heck, & Freedenberg, 1992; Swan, 1995). In the last few years, a number of distance education articles have appeared in the literature that involve some aspects of attitudinal measurement.

The Greater Southeast ITV Consortium has studios in ten rural secondary schools and two vocational centers in the Southeast corner of North Dakota. This consortium is struggling to provide educational equity and access to students within the consortium enrollment area. Because of their small 9-12 enrollment, (Fairmont has 53 students, Hankinson has 126, Lidgerwood has 87, Milnor has 68, North Sargent at Gwiner has 70, Oakes has 199, Richland at Colfax has 85, Sargent Central at Forman has 138, Verona has 20, and Wyndmere has 93 students), these schools find it difficult to offer selected limited

enrollment, advanced placement and enrichment courses. Financial constraints make it impractical to offer courses at each location. The Great Western ITV Consortium has studios in 5 rural secondary schools in the west central region of North Dakota. Like the Southeast Consortium the Great Western Consortium is struggling to provide students equal access to certain courses. Limited student enrollment (student enrollment 9-12, Beulah 302, Center 148, Golden Valley 52, Hazen 278, and Stanton 50), financial constraints and limited access to qualified teachers by these school districts has forced them to develop alternatives in providing courses.

The IVN/ITV system provides a way for the school districts to combine resources and pool students who are interested in classes that normally could not be offered. Examples are Spanish, College Algebra, AP English, and Calculus.
In light of recent research regarding distance education, the project reported in this article appears to be fairly unique in that two-way audio/two-way full-motion video distance technology was used to link simultaneously a host site and several other schools which were provided with specific courses. Full motion means there is no "starting" and "stopping" of the image. It appears that limited detailed surveys have been reported for secondary students attending a two-way audio/two-way video (IVN - Interactive Video Network) distance education courses from one part of a state as compared to students in similar situations in another part of a state. Both school consortiums were using almost identical types of equipment, both hardware and software.

North Dakota's IVN/ITV system uses CLI codecs and Multipoint Control Units. They updated the three MCU Classics to new MP2 in 1995 to be fully standards compliant. This additionally provides standards-based multipoint conferencing. A dial-up video conferencing service, capable of serving any brand codec, was developed around the installation of these MP2s.

The classroom equipment was initially provided by Todd Communications. US WEST provides the intra-LATA communications. US Sprint provides for inter-LATA communications. Terrestrial T-1 lines are used for transmission. In some places, these happen to be fiber optic lines; however, normal T-1 lines are used in most places.

In addition to the CLI Rembrant 11/30 Codec equipment, IVN/ITV classrooms utilize the Elmo Ev-308 Optic view (AC120V, 60Hz, 30W). The television monitors are equipped with a Panasonic remote control unit (WV-7330) and video switcher (WJ 200RB). The IVN Group has continued to upgrade the classroom equipment so these model numbers may not be relevant. The originally installed NEC AEC-400 Acoustic Echo canceller and the TOA 900 series amplifier (A-903-A) were updated by utilizing a combinations system processor which provides high quality audio with BOSE amplifiers. They used a Shure AM Mixer. The controls on the instructor desks are the System 500 - Sigma Electronic & Desktop SVX-210 Video Switcher.

The IVN/ITV system is two-way audio and video interactive network. Students and teachers at all locations can see, hear, and talk to each other over the system. There are two video cameras in each classroom; one camera is on the teacher's work station and the other camera is focused on the students. Each classroom has at least four television monitors in the room for the students and two monitors located on the ceiling over the students' desks for the teacher. One of the student monitors shows the teacher and/or visual aids and the other monitor shows the students at individual sites. Every classroom has the same

opment and every school can be an originating site. Additionally, each site has facsimile machines, telephones, and computer terminals.

Purpose and Objectives

The problem addressed in this study is the lack of knowledge and understanding about IVN/ITV in public schools and its impact on students' learning and their attitudes toward learning. This study will identify perceptions of students in IVN/ITV courses with respect to the educational quality of the courses offered and their satisfaction with the educational experiences in the distance learning programs. The specific research objective was to: determine student perceptions about IVN/ITV courses. Subquestions were: (1) gender differences in student perceptions, (2) number of students taking classes by period and by grade level, (3) differences in students' perception at the remote sites and the host sites and, (4) reasons why students took IVN/ITV classes.

Procedures / Analysis of Data

Data were collected using a structured questionnaire developed by the researcher. The research method used was descriptive in nature. While quantitative instruments provided some measurements of satisfaction and fulfillment of expectations, qualitative data collected added in-depth insights.

The survey population was identified as all students enrolled in IVN/ITV courses within the two consortiums in the 1994-95 academic year, spring term 95. The population was homogeneous by age and academic grade levels, 9-12 grades. All of the students were enrolled in IVN/ITV courses, which may not be representative of the typical high school student. Content validity was established by having the pilot questionnaire reviewed and completed by a panel of experts that included experts in evaluation and measurement, technology diffusion, classroom teaching, administration, and curriculum. The pilot study was administered to three groups: 1) faculty and students of sending and receiving sites from a secondary school consortium, eight schools, who were not involved in the study, 2) the advisory committee for distance education technology in the region and 3) university faculty involved with distance education at North Dakota State University. In addition, the validity of the survey was evaluated, in part, by considering three threats to validity outlined by Morris et al. (1987). First, lack of standardization in test administration was not an apparent threat to validity. Data collection took place once at the end of the semester. Furthermore, during the data collection, instruments were distributed and students were asked to simply fill out the instrument using guidelines presented at the beginning of the survey. All students received the same amount of time for survey completion, and no hints or clues regarding "proper answers" were supplied. Second, response bias or evaluation apprehension was lessened by telling students that their views were only to be used to evaluate the class. Third, the format of surveys can also affect the validity of measures; however, analysis of the data suggests that most students used the scale in an internally consistent manner. Also, students did not have any questions regarding survey format when the data were collected. Finally, surveys were completed blind and were not linked to course grades in any way. The data from the pilot test of the questionnaire were analyzed for reliability. Cronbach's alpha and factor analysis using the Statistical Package for Social Sciences (SPSS) were used to establish reliability, r= .82. Modifications were made to enhance validity and reliability.

The questionnaire was developed for quantitative measures of students' perceptions of the experiences, with a series of 27 statements using a four point Likert scale included: strongly agree (a value of 1), agree (2), disagree (3), and strongly disagree (4). Question 28 was designed to determine why the student took the IVN/ITV course and frequency responses were used as the method of analysis. Qualitative measures, using three open-ended questions, asked about students' feelings of the ITV courses in which they were currently enrolled.

The survey questionnaire was administered to all students enrolled in IVN/ITV courses in the 1994-96 academic year. All respondents answered the survey at the same time under similar conditions. Immediately following the completion of the survey, the researcher analyzes data to determined if the respondents understood and felt comfortable answering the questions. The population was homogeneous by age and academic grade levels. All of the students were enrolled in IVN/ITV courses, not representative of the typical high school student.

Data were collected from the students enrolled in all secondary IVN/ITV courses offered by the consortiums of all schools located in the Greater Southeast ITV Consortium and the Great Western Consortium. Students taking more than one IVN/ITV course were asked to fill out only one questionnaire. Three-hundred eleven students enrolled in IVN/ITV classes in the Southeast consortium completed the structured questionnaire; 18 questionnaires were unusable leaving 293 usable instruments and 86 students enrolled in IVN/ITV courses in the Great Western Consortium completed the questionnaire. A total population of usable instrument were 379.

Results

Data from grade level of students taking IVN/ITV courses showed that as students progressed in grade level, more students were taking IVN/ITV courses. Course enrollment was as follows: grade 9 had 54 students enrolled, grade 10 had 88, grade 11 had 106, and grade 12 had 130. Between the two school consortiums there were 119 male students and 260 female students enrolled. Females completed 68.6% of the surveys and 73.4% of the students were at remote sites. The study revealed 101 students enrolled at the host sites and 278 enrolled in remote sites. We also discovered that 124 students of the 293 students in the Southeast Consortium enrolled in Spanish and 169 in all other IVN/ITV classes. The Great Western Consortium had 34 students enrolled in foreign language: French, German, Latin, and Spanish. Student enrollment by class period indicated consistent numbers in all periods. During class period 1 there were 75 students, period 2 = 60, period 3 = 42, period 4 = 64, period 5 = 54, period 6 = 46, and period 7 = 35 students enrolled. One student was enrolled in a course (statistics) before school started (period 0) and 2 students were enrolled in a course (statistics) after school ended (period 9).

Table 1 identifies perceptions of students toward the IVN/ITV courses in which they were enrolled at both home and remote sites. Students identified that they would take another ITV course and their parents liked the idea of IVN/ITV courses being offered to students. They disagreed with the statements that materials were late, they would earn higher grades, and that more students cheat in IVN/ITV courses.

Table 1 Combined Rank order of Student perceptions towards IVN/ITV courses.

Statement	Mean		SD	
	SE	WR	SE	WR
I would take another ITV class if it were one I wanted.	1.00	1.83	0.68	0.81
My parents think that ITV classes are a good idea.	1.00	2.07	0.73	0.66
ITV is a good method to offer some courses.	1.70	1.77	0.77	0.69
I could see the TV monitors from where I sat.	1.96	1.94	0.91	0.71
I was able to see all the materials the teacher presented.	2.00	1.99	0.66	0.62
I was able to talk to the teacher as often as I needed to.	2.04	2.05	0.78	0.72
The chairs and/or tables in the ITV room were comfortable.	2.12	2.14	0.98	0.69
I like my ITV class better than my other classes.	2.40	2.27	0.78	0.79
I got to know the students from the others schools.	2.29	2.43	0.77	0.82
I could hear the other students in the other sites.	2.34	2.41	1.08	0.77
I would be interested in taking college courses offered on ITV.	2.50	2.33	1.21	0.83
Student discipline is better in the ITV classes.	2.40	2.49	0.89	0.70
My work was graded and returned as fast as in my other classes.	2.50	2.54	1.02	0.82
The materials for the class were often late in arriving.	2.80	2.24	0.86	0.72
I earn higher grades in my ITV class than my other classes.	2.80	2.58	0.99	0.77
Most of the talking/questions were done by students in host site.	2.60	2.91	0.83	0.76
More students cheat in ITV classes than other classes.	2.80	2.99	1.13	0.63

SE = Southeast Consortium WR = Great Western Consortium

Table 2 identifies perceptions of remote site students toward the IVN/ITV courses in which they were enrolled. Students agreed with the statements that they could hear the teacher well, that the teachers paid attention to all students, that they could ask questions at any time, and that the teachers knew the students as well as those in the home site.

When students were asked to identify why they took an IVN/ITV course they responded by identifying various reasons. "I thought it would be interesting to take an IVN/ITV class" identified by 215 students, "I really wanted the class and it was the only way to get it" by 202 students, "Because it was the best option for that particular hour" by 193 students, "Because my friends were taking the class" by 64 students, and "My counselor/teacher/principal put me in it" by 23 students.

Table 2 Rank order of perceptions of All Remote Site students towards IVN/ITV courses.

Statement	Mean		SD	
	SE	WR	SE	WR
I could hear the teacher well.	1.95	2.01	0.67	0.62
The teacher paid attention to both home and remote sites.	2.00	1.98	0.97	0.61
I felt I could ask questions in class when it was necessary.	2.00	2.11	1.03	0.65
It was easy to ask questions in class.	2.10	2.07	1.02	0.70
I would like to meet more with students from other schools.	2.19	2.07	0.97	0.68
The teacher taught from our site as much as necessary.	2.00	2.39	0.79	0.77
I felt my ITV teacher knows me as well as my other teachers.	2.00	2.50	1.14	0.79
I felt the teacher could hear me when I asked questions.	2.30	2.19	0.88	0.68
I was able to hear questions from other sites.	2.40	2.41	0.86	0.73
It is easier to cheat at a remote site.	2.70	2.84	1.23	0.68

SE = Southeast Consortium WR = Great Western Consortium

Student were asked to respond to three qualitative questions related to their IVN/ITV course experiences. Question one was "What do you feel are the good things about interactive video network and the classes you are taking on it?" Student responses were summarized as follows: I can take the class I want, It offers classes we normally wouldn't have; Meet new people from different towns; You get a chance to learn another language; Have better teachers for the subject; Learn with different people, teachers and subjects; Have more variety of classes; The teacher involves everyone; and The only way to meet college entrance requirements.

Question two was "What do you feel are the weak points about interactive video network and the classes you are taking on it?" Responses summarized were: It is boring to stare at a TV all hour; Getting papers grades/sent away; Younger students; Some remote sites are not getting the same attention; The equipment doesn't always work; Time schedules are different in different schools; Hard to work with groups; You can't have hands-on learning; Hard to hear at times; Remote sites goof around too much; Quickness of grading and returning tests; Cannot eat or drink anything in the room; Your teacher is not always here; Crowded classrooms; Discipline; Can't see everyone at once; and Teacher not available throughout the day for questions.

The final questions was "How would you suggest changing the interactive video network classes and any other suggestions you might have relating to Interactive Video Network classes?" The responses summarized were: Have teacher visit all sites more often; New seating; Put in more microphones; Have more courses offered over IVN/ITV; Teachers come to different sites more often; I'd like to see more science courses; Put TV's up higher; Better sound; Require everyone to take at least one course over IVN/ITV; and Expand to before and after school hours.

Conclusions

Gender differences were not found among the students in these two IVN/ITV consortiums. There were no noticeable differences in the opinions of the students at the remote sites and the host sites. Individual schools did not differ on the degree of student satisfaction with the IVN/ITV courses.

Students were taking courses during every class period of the day without major differences in enrollment numbers. Students at both host and remote sites were satisfied with the quality of IVN/ITV courses, believed these courses lived up to their expectations, as well as the expectations of their parents, and that the experience will benefit them in the future. Students believe they do as well in IVN/ITV classes as in a traditional classroom.

Students use IVN/ITV as a regular part of their education and do not want to be singled out as special. Like exceptional students in other classes, they prefer to keep a low profile rather than call attention to attributes that distinguish them from their peers.

Students believe that IVN/ITV is an effective way to teach courses in small rural schools where geographic location, adequate funding, and student enrollment are limiting factors. There is face-to-face, fully interactive teaching and learning taking place in a warm and caring environment that is as effective as traditional methods.

Students are excited about the IVN/ITV courses and agree that offerings should be expanded to include a greater variety of subjects. Students believe that offering courses

before and after school hours would be beneficial and would increase the number of students taking courses over the IVN/ITV system.

Students agreed that making the classroom setting more comfortable would facilitate more students enrolling in IVN/ITV courses. They would like to see more microphones in each IVN/ITV classroom as well as locating the TV's higher so every student could see easier. Students were also very concerned with the lack of discipline in remote site classrooms.

Most students liked being part of this new technology. Students use IVN/ITV courses as a regular part of their education and do not think they are special. Students believe that IVN/ITV courses are an effective way to learn in small rural schools where geographic location, adequate funding, and student enrollment are limiting factors. There is face-to-face, fully interactive teaching and learning taking place in a warm and caring environment that is as effective as traditional methods.

Recommendations

Further research is needed to determine why more applied academic courses are not being offered over IVN/ITV systems. The results of this study did indicate that several instructional areas were not being delivered via IVN/ITV.

Further research is needed to explain the effectiveness of IVN/ITV as an instructional delivery system. The results of this study cannot be generalized to other regions and states without similar delivery systems. The results of this study, however, indicate that the IVN/ITV is potentially an effective medium for instruction.

Further research is needed to determine training needs of instructors and administrators in delivery methods and instructional design. This study indicated that students were bored with only one or two models of instruction being used in IVN/ITV courses.

References

Barker, B. 1990. Distance education in rural schools: Advantages and disadvantages. Rural Educator 12(1):4.

Barker, B., Frisbie, A. & Patrick, K. (1989). Broadening the definition of distance education in light of the new telecommunications technologies. American Journal of Distance Education, 3(1): 20-29.

Beare, P. (1989). The comparative effectiveness of videotape, audiotape, and telecture in delivering continuing teacher education. American Journal of Distance Education, 3(2): 57-66.

Brinkley, R., Pavlechko, G., & Thompson, N. (1991). Designing and producing courseware for distance learning instruction in higher education: A nine step, four element team approach. TechTrends, 36(1): 50-54.

Charron, E. & Obbink, K. (1993). Long-distance learning: Continuing your education through telecommunications. The Science Teacher, 60(3): 56-69.

Chow, S. (1989). A study of distance learning technology in Utah: A statewide overview. San Francisco, CA: Far West Lab for Educational Research and Development.

Grimes, P., Krehbiel, T., Nielson, J. , & Niss, J. (1989). The effectiveness of "Economics USA" on learning and attitudes. Journal of Economic Education, 20(2): 139-152.

Jackman, D. & Swan, M. (1994). Distance Education Instructional Model applications. New Horizons in Adult education, 12(1): 3-11.

Kelly, W. (1993). Interview. Speaking personally with William J. Kelly. The American Journal of Distance Education 7(1): 74-82.

McNeil, B., & Nelson, K. (1991). Meta-analysis of interactive video instruction: A 10 year review of achievement effects. Journal of Computer-Based Instruction, 18(1): 1-6.

Morris, L, Fitz-Gibbon, T., & Lindheim, E. (1987). How to measure performance and use tests. Newbury Park: Sage Publications.

Rule, S. & Stowitschek, J. (1991). Use of telecommunications for inservice support of teachers of students with disabilities. Journal of Special education Technology, 11(2): 57-63.

Schmidt, J., and Faulkner, S. (1989). Staff development through distance education. Journal of Staff Development 10(4): 4.

Schrum, L. (1991). Distance education: A primer for administrators. Oregon School Study Council 35(1).

Shapiro, A., Heck, J., and Freedenberg, P. (1992). The planning, design, and implementation of a statewide distance learning system. Educational Technology, (July): 8.

Swan, M. K. (1996). Distance Learning Effectiveness - Student's Perceptions. Paper presented at the Central States Regional Research Conference, St. Louis, MO.

Swan, M. & Jackman, D. (1995). Distance education instructional models applications. Paper presented at the Central States Regional Research Conference, St. Louis, MO.

Swan, M. (1995). Effectiveness of distance learning courses - students' perceptions. Paper presented at the American Association for Agricultural Education Research Conference, Denver, CO.

Swan, M. & Brehmer, J. (1994). Educational instruction via interactive video network. Journal of Agricultural Education, 35(1): 13-20.

Swan, M. (1993). Interactive video network - education instructional methods. Paper presented at the American Association for Agricultural Education Research Conference, Nashville, TN.

Tift, C. (1989). Elements of a successful technology-based distance education program. Rural Special Education Quarterly 9(4): 37- 38.

USING AN AGRICULTURAL MODEL TO ESTABLISH CORE OCCUPATIONAL COMPETENCIES FOR SECONDARY VOCATIONAL PROGRAMS

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Abstract

This study developed a model for determining critical secondary vocational occupational competencies by testing it in the agricultural education sesrvice area. The method used to generate the information was an item analysis of competencies that industry experts identified as core competencies in the Ohio Competency Analysis Profile (OCAP) process.

The study identified the importance of core competencies in 10 agricultural occupations and determined the critical core of occupational competencies in each of the occupations. Conclusions and recommendations for the study included:

1. *Industry workers can rate needed competencies and should be used to do so.*
2. *An importance core exists in the area of safety instruction and should be taught to students studying all 10 agricultural worker categories.*
3. *Other vocational service areas should follow the model of agricultural education by conducting similar studies in appropriate worker categories.*

Introduction

Technology, academics, basic skills, and authentic assessments are just some of the terms used in today's educators daily teaching and learning process. Educational reform movements, state and federal commission reports, and ever shrinking financial support for education can make the daily life of an educator challenging to just plain frustrating. Educators at all levels seem to be consumed by the latest movement towards the better school, the inclusion of all students, and the scrutiny of the general public. If educators, especially vocational educators, cannot focus on developing the best educational opportunities for their students to succeed and advance into today's ever changing societal environment, they will have left a generation of workers without necessary skills.

"The nation's schools must be transformed into high-performance organizations in their own right" (Secretary's commission on Achieving Necessary Skills, 1991, p. vi). Vocational education has a unique opportunity to develop a process for this transformation. Many of the current reform movements call for "new" components such as business/industry linkages, community input, and product-based rather than process-based evaluation. The new jobs to be created in the next decade will require more, not less, education (Bailey, 1991). Vocational educators' commitment to developing occupationally and academically competent, as well as employable, individuals through a curriculum

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development process utilizing business and industry advisory committees is the role model that reform movements could follow as exemplified by workforce development councils.

In order to assist vocational teachers in the determination of what should be taught as part of their program's curriculum, the following was the statement of the problem for this study: How can future vocational educators determine the competencies students should possess for employer identified and verified employability competency lists which contain core competencies. With that problem in mind, the purpose of the study was to determine core vocational competencies using an agricultural model. The importance of the competencies were determined for secondary agricultural education programs as identified by Ohio agricultural industry and business experts.

Vocational educators can create programs with employer-verified competency lists. This is equally true in agricultural education. The use of business, industry, and labor representatives to analyze the occupational competencies was recommended in The Unfinished Agenda (National Commission on Secondary Vocational Education, 1984).

The occupational skills portion of the curriculum must be based upon an analysis of the occupation for which the training is provided. Additionally, business, industry, and labor must be involved in vocational curriculum and revision activities on a continuous basis to keep curricula current with technological advances. (p. 14)

"Curricula for vocational education are derived from requirements in the world of work" (Miller, 1985, p. 117). As a result vocational curriculum must be adapted to fit the ever changing work environment. The first step is to analyze and verify the competencies necessary for successful employment and advancement in agricultural occupations (Waidelich, 1991). Agricultural educators should analyze the competencies by occupation and level with the occupation, not by current program types and courses. Landscaper, forester, and animal management technician are examples of occupations that agricultural educators should analyze before they develop their agricultural education programs.

Core items identify the knowledge, skills, and attitudes essential for entry-level employment. Advancing items identify the knowledge, skills, and attitudes needed to advance in a given occupation. Futuring items identify the knowledge, skills, and attitudes needed to enter and remain in a given occupation three to four years from now (Vocational Instructional Materials Laboratory, 1992).

All agricultural education students in a program should receive a basic core of agricultural and employment competencies for each program, regardless of the student's geographic location in the state, the type of agriculture in that location, the agricultural background of the student , and the student's agricultural occupational goals. All agricultural programs should teach the core competencies. This core will be the course content over the program length. Districts may add or expand as many units , subunits, competencies, or competency builders as desired to reflect local needs, trends, and specialties. However, local advisory committees should identify and verify additional items (Vocational Instructional materials Laboratory, 1992).

Purpose and Objectives

The purpose of the study was to collect data from industry representatives and determine their perspective on the competencies that should be developed in agricultural workers. The specific objectives of the study were to:

1. Determine the importance ratings for competencies in each of 10 agricultural worker categories.
2. Determine a core of technical competencies for all 10 agricultural worker categories.
3. Determine if the agricultural model could be used in other vocational service areas.

Procedures

The study used a comprehensive and employer-verified competency list. Ohio Competency Analysis Profile (OCAP) lists evolved from a modified DACUM (Developing A CurriulUM) process involving business, industry, labor, and community agency representatives from throughout Ohio. The researcher used the criticality process of the American College Testing program (1994) as the method of collecting importance and relative time spent data. Subject matter experts (SMEs), usually incumbent employees, for the job determined the most critical competencies for their occupation.

The researchers, along with the Vocational Instructional Materials Laboratory (VIML), Center on Education and Training for Education (CETE), and The Ohio State University developed the survey procedures and instrument according to guidelines by the American College Testing Program. Between January and June 1994, the VIML mailed the survey instrument to collect data.

The population for this study was employees of agricultural firms in Ohio working full time in an occupation that would require initial entry with a vocational education high school training background. From this population, the researchers and state supervisors in the Agricultural Education Service, Division of Vocational and Career Education, Ohio Department of Education asked teachers, state and local advisory committee members, and trade and business organization officers to help identify individuals who met the definition of the population. The state supervisors identified a group of 50 individuals for each OCAP competency list. Of the 500 identified individuals 222 employees responded to the survey.

Analysis of Data

The researchers used descriptive statistics (means and standard deviations) to analyze data. The importance rating was based upon a four point rating scale where: 0 = not part of the job (interpreted as no importance), 1 = minor importance, 2 = average importance, and 3 = major importance.

Results

The highest rated competency for **agricultural production worker** was apply safe work habits ($\underline{M}$ = 2.79). Seven of the top 20 competencies were from the agricultural mechanics unit, four of the competencies were from the business management unit, while three of the competencies were from the general safety precautions unit. The highest rated competency for **agricultural sales and service worker** was interact with customer ($\underline{M}$ = 2.85). Nine of the top 20 competencies were from the fertilizer/chemical sales and

service worker unit, three were from both the general safety precautions and sales skills units, while two each were from the customer service and business management units. The highest rated competency for the **agricultural/industrial worker** was maintain safe work environment (**M** = 2.87). Four of the top 20 competencies were from the general safety precautions and drivetrain units, three were from the general repair procedures unit, two were from the electrical systems and engine block units, while one was from the general equipment maintenance unit. The highest rated competency for **animal management technician** worker was demonstrate safe work habits and maintain safe work environment (both **M** = 2.54). Of the 20 highest rated competencies, four were from the handling, health care, and business management units, while three were from the general safety precautions unit. The highest rated competency for **floriculture and greenhouse worker** was determine customer needs and services (**M** = 2.56). Eight of the top 20 competencies were from the marketing and sales unit, four were from the greenhouse plant production unit, while three were from the general safety precautions unit.

The highest rated competency for **forestry industry worker** was maintain a safe work environment (**M** = 2.91). Three of the top 20 competencies were each from general safety precautions, forestry equipment operations, forest establishment, and forestry equipment maintenance. The highest rated competency for **meat processors** was clean and sanitize the facility (**M** = 3.00). Five of the top 20 competencies were for the competency area of product handling unit, four were for the wholesale cutting unit, and three for general safety unit. The highest rated competency for nursery and **garden center workers** was maintain company image (**M** = 2.96). Six of the top competencies were from the operations and marketing and sales units, and two from the equipment maintenance unit. The highest rated competency for **resource conservation workers** was maintain safe work environment (**M** = 2.60). Five of the top 20 rated competencies were from the resource conservation unit, four from the general safety precautions unit, and three from the equipment maintenance unit. The highest rated competency for **turf and landscape workers** was enhance company image (**M** = 2.90). Seven of the top 20 rated competencies were in the turf and landscape operations unit, five were from equipment maintenance, and three were from general safety precautions.

Conclusions/and Recommendations

It is both possible and desirable to work with industry to establish priority order to competencies that should be taught to vocational students, including agricultural education students. By asking industry for help in determining competencies needed, industry can establish closer ties that will enhance the assistance of workforce development councils. It is also possible to glean from the prioritized competencies a core list for all programs. For this study the core was safety instruction.

Recommendations included (a) agricultural educators should concentrate on general safety instruction, (b) the core should be the most sharply focused part of the curriculum, and (c) all vocational service areas should use a similar approach to identify priorities for curriculum.

References

American College Testing Program. (1994). Work keys occupational profiling training manual. Iowa City, IA Author.

Bailey, T. (1991). Jobs of the future and the education they will require: Evidence from occupational forecasts. Education Researcher, 20(2), 11-20.

Miller, M. D. (1985). Principles and a philosophy for vocational education. Columbus, OH: The Ohio State University, The National Center for Research in Vocational Education.

National Commission on Secondary Vocational Education. (1984). The unfinished agenda: The role of vocational education in the high school. Columbus, OH: The Ohio State University, The National Center for Research in Vocational Education.

Secretary's Commission on Achieving Necessary Skills. What work requires of schools: A SCANS report for America 2000. Washington, DC:
U. S. Government Printing Office.

Vocational Instructional Materials Laboratory. (1991). Ohio Competency Analysis profile (OCAP). Columbus, OH: The Ohio State University.

Waidelich, W. D. (1991). Developing an Agricultural Education Curriculum. Unpublished paper. Columbus, OH: The Ohio State University, Ohio Agricultural Education Curriculum Materials Service.

DOCTORAL STUDIES PRESENTED

AN ANALYSIS OF STUDENT PROGRAMMATIC DELAYS IN POSTSECONDARY FLIGHT TRAINING PROGRAMS: A NATIONAL STUDY

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Abstract

The purpose of this study was to determine the number of University Aviation Association(UAA) member postsecondary institutions that were experiencing student delays in flight certification. Such delays can lead to increased costs for the student, the failure to complete the intended academic program, and an interruption in career progression.

The study revealed that approximately 88% of the respondents reported that they were experiencing a problem with flight student progress delays at their institution. The research indicated that institutional financial policies, such as the formal determination of flight student finances in advance of each semester, were factors in reducing "Major" progress delays.

Introduction

Since the passage of the Airline Deregulation Act (ADA) in 1978, the need for professionally-trained air carrier pilots in the United States has expanded substantially. Major carriers have used the economic freedoms granted by the ADA to expand, and dozens of new air carriers have received their operating certificates.

The reduction in military pilot training in the post-Vietnam era came at a very inopportune time for the airlines. While the United States air carriers have already witnessed a decrease in pilot experience levels as a result of recent expansion, they are now facing the largest pilot-force transition in the history of civil aviation. In the next 10 years, approximately 23,000 airline pilots will retire; nearly one-third of those currently employed. Further, if the airline industry regains profitability, it is estimated that an

additional 4,500 pilots will be needed each year for carrier expansion (Bayles, 1993, p. F-1).

Today, postsecondary academic institutions have replaced the military as a major source of cockpit staff. The number of postsecondary institutions in the United States has grown from 229 in 1950 to 565 in 1985. In 1950, 33 of those institutions offered flight technology courses, with that number increasing to 397 by 1985 (Rollo, p. 21, 1990). As Bayles (1993) noted, "a few years ago, 85% of airline crews learned how to fly in the military; by decade's end, only a third will have that claim" (p. F-8).

While the colleges and universities offering postsecondary flight training programs do not have the aviation resources of the U.S. Air Force or Navy, the airlines have found that postsecondary institutions produce high-quality, professional aviators. Further, most postsecondary programs require that the pilots learn critical thinking skills through a substantial component of general education and cognate courses (Federal Aviation Administration, 1993a).

Many postsecondary institutions coordinate their curricular offerings through membership in the University Aviation Association (UAA), and in conjunction with the Airway Science Program (AWS) developed by the Federal Aviation Administration (FAA) (Schukert, 1992). The Airway Science Program was introduced in 1981, by then Administrator of the Federal Aviation Administration J. Lynn Helms, through the creation of a task force for the proposed AWS program (Federal Aviation Administration, 1993b). According to Clifford (1983), "the Airway Science Program is intended to provide the National Airspace System (NAS) and the FAA with a dependable source of people who not only are competent technically but who also have the academic foundation for leadership jobs" (p. 4).

Thus, the typical career track for the professional aviator has changed dramatically in the post-Vietnam, post-ADA era. The colleges and universities have supplanted the approximately one million dollar per pilot government-provided military training.

Purpose and Objectives

The purpose of this study was to determine the number of UAA member postsecondary institutions that were experiencing student delays in flight certification. Such delays can lead to increased costs for the student, the failure to complete the intended academic program, and an interruption in career progression. The study began with six basis research questions from which a questionnaire was developed. The questions were as follows:

1. How many UAA institutions nationwide are currently experiencing problems with flight student programmatic delays, whereby students fail to complete their flight courses in the semester prescribed by the curriculum?

2. Is the problem of flight student programmatic delays increasing or decreasing?

3. Is there a difference between less-than-four-year and four-year postsecondary flight training institutions in the area of flight student training progression?

4. Is the use of flight simulation related to postsecondary flight student training progression?

5. Is institutional monitoring of student flight progress during the semester related to flight student training progression?

6. Are weather, geographic location, instructor availability, instructor turnover, aircraft availability, and institutional financial and grading policies related to flight student training progression?

Methods and/or Procedures

Description of the Population

The population for the study included the flight program administrators at all University Aviation Association (UAA) member postsecondary institutions in the United States. There are 109 member institutions listed in the UAA directory. However, three institutions were removed from the study—the two that are located outside the United States and the senior author's home institution. A questionnaire was sent either to the aviation program coordinator or chairperson, identified by the UAA, at each of the 106 eligible UAA member institutions.

Instrumentation

The survey instrument was developed in response to, and on the basis of, problems of postsecondary programmatic delays experienced by flight students at the senior author's home institution, and that were understood to exist at other UAA member institutions. Questionnaire content was guided by the six research questions identified previously. Additional questions were developed as the result of closed- and opened-ended questionnaires completed by students at the senior author's institution (Bryan, 1995). Curricular data developed by the UAA were also used in developing the survey instrument (Kiteley, 1976).

The questionnaire was prepared so as to fit on the front and back side of one sheet of paper. A letter of introduction, identifying the purpose of the study and noting the anonymity of the respondents, was included with the survey questionnaire. A stamped,

self-addressed return envelope was included for the return of the questionnaire to the researcher. The return envelopes were coded, with a number assigned for each UAA recipient.

Prior to mailing the questionnaire to the entire UAA list of program administrators, a pilot survey was conducted to test the appropriateness of the instrument. Five flight administrators were chosen at random from the UAA list and were mailed the cover letter and research questionnaire two weeks prior to the full mailing to listed UAA institutions. The responses from the pilot mailing were reviewed. As a result of the comments from the pilot survey of the five participants, changes were made to Question 3 of the survey instrument to allow for additional geographic regions.

The survey questions related directly to the research questions. This afforded content validity to the study, as assessed by a three-member faculty panel of experts at the University of Massachusetts. Content validity, as described by Borg and Gall (1989), is the degree to which the sample questions represent the content that the research instrument is designed to measure. Content validity and clarity were ensured further by pilot testing.

Data Collection

After the pilot survey of five institutions, the questionnaires were mailed to the 101 remaining UAA administrators on September 27, 1995. Each cover letter to the potential respondents included an offer of a summary of the research findings. The offer of providing the data summary was not predicated upon the individual's completion of the survey. The UAA administrator questionnaire contained a total of 20 questions. Seventeen of the questions were directly related to issues pertaining to the postsecondary flight student experiences and operations. The remaining questions were used to gather generic data concerning the postsecondary institution and its operations. A second mailing to non-respondents was made three weeks after the main mailing, and follow-up telephone calls to non-respondents were made one week after the second mailing. A total of 80 responses were completed and returned by respondents, resulting in a 79% response rate.

Analysis of Data

The data were reported in narrative and tabular form as appropriate. Crosstabulations were presented where the information could be useful in understanding flight student

programmatic delays. Execustat 3.0 was utilized for all statistical analyses. Appropriate graphical representation of data were included. Correlations of items in the survey were analyzed and significant correlations determined. Pearson product-moment correlations were utilized for the correlation analyses. An alpha level of .05 was set a priori.

Findings

This study of postsecondary flight training delays began with six basic research questions. Each of those questions is presented again to provide a context for the findings.

1. How many UAA institutions nationwide are currently experiencing problems with flight student programmatic delays, whereby students fail to complete their flight courses in the semester prescribed by the curriculum?

Responses to this question were garnered from Item 6 of the questionnaire. The responses to Item 6 reported whether the institution was experiencing no problem, a minor problem, or a major problem. The results were reported in Table1. The data revealed that nearly 88% of the postsecondary institutions were experiencing a problem with the failure of flight students to complete their flight courses in the semester prescribed by the curriculum. Responses indicated that 37 institutions (58% of the respondents), were experiencing minor delays, and 19 institutions (nearly 30%), were experiencing major delays. Only seven institutions (11%), reported that they were not experiencing a problem with flight student programmatic delays.

Table 1

Level of Flight Student Progress Delay Problems by Institution

Delay Problem at Institution	Number	Percent
None	7	10.94
Minor	37	57.81
Major	19	29.69
Non-response	1	1.56
Total	64	100.00

In addition to the direct response from the participants to Research Question 1 in Item 6 of the questionnaire, further data were gathered in Item 11 of the questionnaire. In that

question, participants were asked "How many of your flight students fail to complete their flight course in the semester predicated by the syllabus?"

Over 20% noted that 1-10% of their students failed to complete their flight course in the prescribed semester; over 34% reported 11-25%; nearly 22% noted 26-50%, and nearly 19% responded that more than 50% of their students failed to complete their flight courses on time. One respondent reported that all of their institution's students completed their flight courses in the semester predicated by the syllabus.

2. Is the problem of flight student programmatic delays increasing or decreasing?

This questioned pertained to whether the problem of flight student programmatic delays was increasing or decreasing at institutions where the respondents reported that a problem existed. The data revealed that 42 respondents (nearly 66%) reported no trend. Ten respondents (nearly 16%) reported that the problem of flight student programmatic delays was decreasing, while 7 (nearly 11%) reported the problem was increasing.

3. Is there a difference between less-than-four-year and four-year postsecondary flight training institutions in the area of flight student training progression?

This question sought to identify whether there was a difference between less-than-four-year and four-year postsecondary flight training institutions in the area of flight student training progression. Thirty-nine (nearly 62%) of the reporting postsecondary institutions were four-year schools, and twenty-one (approximately 33%) were two-year schools. Three respondents (approximately 5%) noted "Other" (two granting a master's degree and the other no degree).

While both the two-year and four-year institutions reported combined minor and major problems with flight student progression of approximately 88%, the two-year institutions had a greater rate of reported "Major" problems. Two-year schools reported "Major" problems in 38% of the responses, while four-year schools reported "Major" problems in approximately 28% of the responses.

4. Is the use of flight simulation related to postsecondary flight student training progression?

Responses to this question were obtained from Items 14 and 15 of the questionnaire. The results of a crosstabulation between Items 14 and 15 with Item 6 from the questionnaire were reported in Tables 2 and 3, respectively.

Table 2

Use of Simulators as part of Flight Course and Level of Flight Student Progress Delays

	Level of Delays			Number/% Row Total
Require	None	Minor	Major	
Yes	7	32	10	49
	11.1	50.8	15.9	77.78
No	0	5	9	14
	0.0	7.9	14.3	22.22
Column	7	37	19	63*
Total	11.11	58.73	30.16	100.00

Note: *One of the 64 institutions that provided flight training for academic credit did not respond to one of the questions in the crosstabulation, and were not included in Table 2.

Table 3

Require the Use of Simulators During Extended Non-Flying Periods and Level of Flight Student Progress Delays

	Level of Delays			Number/% Row Total
Use Simulators	None	Minor	Major	
Yes	1	8	1	10
	1.6	13.1	1.6	16.39
No	5	28	18	51
	8.2	45.9	29.5	83.61
Column	6	36	19	61*
Total	9.84	59.02	31.15	100.00

Note: *Three of the 64 institutions that provided flight training for academic credit did not respond to one or more questions in the crosstabulation, and were not included in Table 3.

The data in Table 2 indicated that nearly 78% of the institutions require the use of simulators or pilot ground training devices as a part of their private or commercial pilot flight courses. While approximately 22% reported no such requirement for their flight

students, those schools produced nearly half of the "Major" problem responses in Item 6 of the questionnaire.

The responses to Item 15 indicated that approximately 81% of the schools did not require the use of simulators for students with extended non-flying periods. However, the schools that did require the use of simulators for students who did not fly for three or more weeks reported a lower rate of "Major" problems with student progress.

There was a total of 62 responses to Item 15. Ten reported that they required the use of ground trainers during such non-flying periods, with only one reporting "Major" progress problems. Fifty-two reported they did not use such devices, and reported 18 "Major" progress problems.

The data indicated a relationship between the incidence of major flight student progress delays at postsecondary institutions and the use of ground training devices. While the use of ground trainers does not appear to lessen the incidence of minor problems, it appears to be related to a reduction in the rate of major progress delays.

5. Is institutional monitoring of student flight progress during the semester related to flight student training progression?

The responses to this question were garnered from Item 20 of the questionnaire. The responses indicated that approximately 90% of the institutions monitored the progress of their flight students during the semester. No clear relationship could be drawn between institutional monitoring of flight student progress during the semester and flight student delays.

6. Are weather, geographic location, instructor availability, instructor turnover, aircraft availability, and institutional financial and grading policies related to flight student training progression?

Item 12 from the questionnaire elicited responses regarding weather, instructor availability, and aircraft availability as factors in flight training delays. Twenty-one of the 64 institutions (approximately 33%) reported that weather was the major factor in flight training delays. Twenty-eight institutions (nearly 44%) noted that student finances were the most important causal factor for flight training delays.

Item 12 also asked the respondents to rank instructor and aircraft availability as causal factors in flight student progress delays. None of the respondents reported these two areas as primary causal factors.

A crosstabulation of institutional geographic location in Item 3 of the questionnaire and Item 6, indicating problems with flight student progress delays, indicated no clear relationship between geographic location of the school and flight student progress delays. A larger percentage of the institutions in the north central United States (20%) reported

no problems with flight student progress delays than those located in the southeastern United States (approximately 15%).

Item 17 from the questionnaire asked whether flight instructor turnover was a factor in flight student progress delays. The results indicated that flight instructor turnover was not a major problem at most institutions. Forty-five (approximately 70%) reported no problems in that area.

Items 9 and 10 of the questionnaire were related to institutional financial policies and their impact of flight student progress delays. The responses from Items 9 and 10 were crosstabulated with the responses from Item 6 of the questionnaire, which asked whether the institution was experiencing a problem with flight student progress delays. The data indicated "Major" flight student delays at 14 of the 29 institutions that did not have a formal process for determining student financial fitness. Only one of nine that did determine student financial fitness reported experiencing "Major" progress delays.

Item 19 from the questionnaire asked whether the respondent's institution used the same policy regarding flight course incomplete grades as in other academic courses. Approximately 48% of the respondents reported a more flexible policy rendered toward flight students, while nearly 52% reported using the same policy as in other academic courses. None of the respondents reported that a less flexible policy was used for flight students.

A crosstabulation was developed using Item 19 and Item 6, the level of reported flight student progress delays. There was little difference between the institutions with the "Same" policy as in other academic courses and those with a "More flexible" grading policy. Of the 33 institutions reporting the "Same" policy toward incomplete flight grades, 20 reported "Minor" problems and 9 reported "Major" problems. Of the 30 institutions reporting a "More flexible" policy, 17 indicated "Minor" problems and 10 reported "Major" problems.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

As a result of the data obtained by this study, the following conclusions and interpretations were drawn:

1. Approximately 88% of UAA postsecondary institutions that offer flight programs indicated that they were experiencing major or minor problems with flight student progress delays.
2. No trend was reported in the rate of flight student progress delays.

3. No relationship was noted between the incidence of flight student progress delays and the level of degree offered at the postsecondary institutions. A larger percentage of the flight student progress delays were classified as major at the two-year institutions.
4. The use of simulators or ground training devices was related to a reduction in "Major" flight student progress delays.
5. No clear relationship could be established between institutional monitoring of flight student progress during the semester and a reduction in flight student progress delays.
6. No relationship was established between weather as a causal factor and geographic location. Instructor turnover, instructor availability, and aircraft availability were not factors in flight student progress delays. Institutional financial policies were related to student delays. No relationship was found between grading policies (for example, incomplete grades) and student delays.

Recommendations

Indications are that postsecondary flight training institutions will continue to play an increasingly important role in the training of professional cockpit crewmembers. With the high cost of the flight component of that training, it is important that postsecondary administrators and educators understand the underlying factors in flight student progress delays.

Prior to this study, no information was available about the incidence of flight student delays at postsecondary institutions. With the results of the study indicating that nearly 88% of the institutions were experiencing such delays, policies should be implemented to ameliorate the problem.

The study indicated that institutions that do not require prepayment of flight fees or engage in a formal determination of flight student finances prior to the start of a semester experience a higher percentage of "Major" delays. It is recommended that institutions engage in a formal determination of student financial fitness or prepayment in an effort to reduce "Major" flight progress delays.

The use of ground-based flight training devices was found to be associated with a reduction in flight student progress delays. With the increasing sophistication and modest cost of such devices, it is recommended that institutions incorporate the use of ground-based trainers in their flight courses.

Further, the research indicated that institutions requiring the use of ground-based training devices for students who did not fly for three or more weeks experienced a lesser rate of "Major" flight progress delays.

This conclusion is supported by the earlier research of Hollister et al. (1973) that noted flight skills for low-time pilots "will decay exponentially to zero with a time constant of four weeks of no flying" (p. x). Therefore, it is recommended that institutions incorporate

policies that require the use of ground-based trainers for students subjected to non-flying periods of three or more weeks.

Further research is recommended in the areas of institutional financial policies toward postsecondary flight students, as well as flight student motivational attitudes and their effect on progress delays. The use of qualitative techniques such as in-depth interviewing would likely yield greater understanding in these areas.

References

Bayles, F. (1993, June 27). The new pilots: Who will take over America's cockpits? Standard Times, p. F-1.

Borg, W. R., & Gall, M. D. (1989). Educational Research(5th ed.). New York: Longman, 1989.

Bryan, J. L. (1995). Investigating reasons for flight student programmatic delays at Bridgewater State College. Unpublished report.

Clifford, F. (1983, January). "The degree's the thing." FAA World, Washington, DC: Federal Aviation Administration.

Federal Aviation Administration. (1993a, January). Airway science curriculum proposal: Baccalaureate programs. Washington, DC: Author.

Federal Aviation Administration. (1993b, January). Airway Science Curriculum Proposal: General Information and Instructions. Washington, DC: Author.

Hollister, W. M., LaPointe, A., Oman, C. M., & Tole, J. R. (1973, September). Identifying and determining skill degradations of private and commercial pilots. (Report No. FAA-RD-73-91). Washington, DC: Federal Aviation Administration.

Kiteley, G. (Ed.). (1976). College aviation academic guidelines. Wichita, KS: University Aviation Association.

Rollo, V. A. (1990). Aviation programs in the postsecondary schools of the United States: 1950 and 1985. Unpublished doctoral dissertation, University of Maryland, College Park.

Schukert, M. (1992). Postsecondary aviation & space education reference guide. Washington, DC: Federal Aviation Administration.

IMPACT OF SKILL STANDARDS ON VOCATIONAL EDUCATION: PERCEPTIONS OF TECHNICAL COMMITTEES

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Abstract

National industry-based skill standards are meant to improve productivity of U. S. workers and quality in the international marketplace as well as improve vocational education. A goal of these standards is to link instructional content to employment needs and address the basic job-readiness and academic skills that high performance work organizations require. The objective of this study was to determine how technical committee members perceive skill standards will impact on the effectiveness of vocational education. Main themes which emerged from the 20 telephone interviews were: improving curriculum development based on industry needs; improving communication between business and industry and education, producing a better prepared entry-level worker, graduating students who will be better able to make the connection between school and work; adopting the standards which will improve the teaching and learning process; and making vocational educators more accountable.

Introduction

As the international marketplace demands quality, timeliness, and customization in producing goods and services, increasing importance is being placed on the skills of individual workers. Thus, while it is important to prepare new workers, improving schools for today's and tomorrow's students is not enough to assure an American workforce that will be globally competitive. Nearly 85% of America's workers for the year 2000 are the workforce today. Of that number, an estimated 25 million of today's workers need to update their skills to keep pace with the changing economy and technology (Office of Work-Based Learning, 1992). Because of the need to train and retrain American workers, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins Act) (U. S. Congress, 1990) and the Goals 2000: Educate America Act legislation (U.S. Congress, 1994) authorized the development of national business and education skills standards.

Vocational educators are being asked to reform their programs to provide occupational preparation that reaches higher standards for entry-level skilled workers. The needs for reform have emerged in part from a call for greater accountability in vocational education and concern about the condition of American economy as it aligns with productivity and globalization. As vocational educators, we are addressing occupational preparation of entry-level skilled workers within the framework of (a) program standards and (b) performance standards that have been mandated by the Perkins Act and Goals 2000: Educate America Act. These standards call for assessing what is currently being taught, determining present and future needs of students, and determining how those specific needs will be met by both teachers and students. A third standard, industry-based skill standards and certification was also mandated by the Perkins Act and more recently the Goals 2000: Educate America. National skill standards to be used on a voluntary basis will provide a framework needed to ensure that workers have the portable skills required by today's fast-changing, global economy according to Secretary of Labor Robert B. Reich (U. S. Department of Labor, 1993). Standards should help improve productivity of U.S. workers and quality in the international marketplace as well as improve vocational education.

One part of both the Perkins Act and the Goals 2000: Educate America Act was to provide matching grants to develop voluntary industry-based skill standards. Both sets of legislation authorized the developments of voluntary national business and education skills standards for occupational competencies in select industries and trades. The standards program provides financial assistance in the form of matching federal grants for organizing and operating committees that developed national skill standards for competencies in industries and trade. The 22 matching federal grants were given to coalitions of industrial associations, educators, and labor representatives to define the skills and knowledge needed by our current and future workforce. A goal of these

grants was to "link instructional content to employment needs and address the basic job-readiness and academic skills that high performance work organizations require" (Vocational Education Weekly, 1993, December).

Significance

Over the past decade, concern has developed for the condition of the American economy. As a result, business and education leaders in the United States have acknowledged the interdependence between education and the economy. The keys to linking education and the economy are workforce preparation and performance. One major outcome of the concern about the economy and workforce preparation has been the development of industry-based standards, including certification of occupational skills and competencies. Because skill and certification standards have been in the development phase, little attention has been given to how these standards might be used by industry and education. The identification, by those who developed the standards, of their perceptions of the adoption of the standards might enable business and industry and the labor and education communities to better utilize skill standards. This study contributes to research on national voluntary industry-based skill standard development. Both business and industry and education will be able to look to this research to seek recommendations which could provide focus for educators as they develop curriculum, determine performance measures, strengthen their business partnerships, and create professional development activities.

Purpose and Objectives

The objective of this study was to determine how technical committee members perceive skill standards will impact on the effectiveness of vocational education. Technical committee members' views of the impact skill standards will have on vocational education are presented. The main themes which emerged from the interviews relevant to the above objective were: improved curriculum development based on industry needs; performance measurements and assessment tools; communication among and between business, industry, education, labor, and government which results in meaningful partnerships; continued funding; and producing an entry-level worker who possesses the skills needed in a high performance workplace.

Procedures

The U. S. Departments of Education and Labor awarded 22 grants to support the development of voluntary skill standards for occupational competencies. The skill standards matching grants provided financial assistance for organizing and operating business-education-labor technical committees to develop national skill standards for competencies in trades and industries. Technical committee members were in an ideal position to influence skill standard development. It was important that representatives from each area gave input so that separate business and education systems became integrated and communication between business and education was facilitated.

By using survey and telephone interview methodology, the researcher was able to describe the technical committee members' perceptions of skill standard technical committees on the development in vocational education. All technical committee members who were identified by obtaining addresses from grant recipient administrators were surveyed using both closed and open-ended questions. This study incorporated a survey to determine the demographic and occupational characteristics of technical committee members as well as member involvement in developing skill standards. Returned surveys were reviewed and analyzed to provide criteria for selecting the subjects for the in-depth interviews.

Qualitative methodology was utilized to determine the technical committee members' perceptions regarding vocational educators' use of skill standards in workforce preparation programs, factors that would enhance or inhibit the adoption of skill standards by vocational educators, and how technical committee members perceive skill standards impacted on the effectiveness of vocational education. Technical committee members from the first thirteen grant recipients were the participants in the first stage of this study. Data were collected using a written survey sent by mail to the 225 technical committee members whose names and addresses were provided by grant recipient administrators. Items for the survey were developed after an in-depth review of research and literature on advisory and technical committees, history of standards and certification development, use of standards and certification in other countries and methods of developing standards. The open-ended questions for this instrument came from the objectives of this study, research and literature, recommendations from the grant administrators, and responses to open-ended items of the written survey. The survey instrument consisted of 45 items in four sections pertaining to the objectives of the study: (a) demographic and occupational characteristics and involvement of technical committee, (b) yes or no response items related to the technical committee members role on the committee, (b) Likert-type items regarding technical committee members' views of the skill standards developed by their committee, and (c) open-ended questions dealing with objectives two through four.

The 100 returned surveys were used to identify technical committee members' demographic and occupational characteristics and perceptions of the process and results of the standard development project. The survey also served as a base for the telephone interview phase of the study. The second phase of this study included development of an in-depth telephone interview instrument. The interview guide consisted of open-ended questions and statements which were designed by the researcher to facilitate the interview process. The telephone interview data was confirmed by using cross-data validity checks. The cross-data validity checks included using only one interviewer, using a prepared script, having a sample of the cassette recordings verified with the printed transcripts, and triangulating the data.

In-depth telephone interviews were conducted with 20 technical committee members to determine their perceptions regarding vocational educators use of skill standards in workforce preparation, factors that would enhance or inhibit the adoption of skill standards, and how skill standards will impact on the effectiveness of vocational education. Skill standards technical committee members' perceptions of their work on the committees provide a significant opportunity to assess the skill standard projects and determine whether the work of the committees was focused on the goals set by the Perkins Act, the U. S. Departments of Education and Labor, and the National Skill Standards Board.

Cross-case analysis was were used to group together interviewees' answers for each question in the interview. All collected interview transcripts were analyzed to discover themes and patterns that would create a portrait of perceptions of technical committee participants of the adoption of skill standard development in vocational education. Coding was used to organize the responses of the open-ended questions followed by identifying concepts as they appeared and tallying similar responses. The next level of analysis was to search for relationships and interrelationships among the interviews. As these relationships and interrelationships in the form of themes and patterns began to arise, the portrait of technical committee members' perceptions of the adoption of skill standard development by vocational educators emerged.

Discussion

Themes which emerged from the interviews included: improving the communication between business and industry and education; making the curriculum content more relevant; producing a better prepared entry-level worker; graduating students who will be better able to make the connection between school and work; adopting the standards which will improve the teaching and learning process; and making vocational educators more accountable. One interviewee summed up his response regarding the impact on the effectiveness of vocational education this way:

> If you expect vocational education to produce a product that industry wants, they [business and industry] should make their expectations darn effective. As long as vocational educators know the stated goals then it can be darn effective. So the best we can expect of our students is to learn the skills we asked vocational educators to teach and bring them in their back pocket when they walk through the door; and industry can shape them when they get in the door. We can expect the students will learn the spectrum of knowledge and be able to tie together education and work.

All respondents felt there would be a positive impact on the effectiveness of vocational education but some believed more work needed to be done to further develop the standards before their full potential would be reached. For example, one replied "They can be very effective but not until they can follow through on the entire package, not just a list of skills, but an entire package--until you have a curriculum for educators to adopt, you are saying the skill standards aren't going to be as effective as they need to be. Not only do we need to identify those skills, we also need to identify the method to attain those skills." Another agreed that "The task now is to rewrite the curriculum; to make the curriculum content more relevant to the needs of business. Once local schools can determine the curriculum and an accepted performance level for the standards, produce an improved teaching and learning process, provide the additional training and work experiences for teachers so they can teach effectively, then vocational education will turn out the kind of employee that business needs." He also felt that vocational educators must be held accountable to make the necessary changes and meet the criteria established by the skill standards.

A positive impact which is occurring is that business and industry are communicating with each other. Most respondents felt lack of communication has been a major problem, and the development of skill standards has become an effective way to address the need for communication among business, industry, and education. Effective, ongoing communication creates a better direction than many vocational reforms have had in the past. Effective communication can help educators understand what "needs to be done." "Educators get highly creative once they have an understanding of what is expected of them and their programs. This will enable students to make the connection between the skills being taught and relate them to work."

There was an overall feeling that once the curriculum had been rewritten to meet the needs of business and industry, and teachers had an understanding of what was expected of them--with relevant training then there would be the desired effectiveness. There was disagreement, however, on whose responsibility it was to develop the

curriculum. Some felt it was business and industry's responsibility while others felt vocational educators must take the standards as presently developed and develop curriculum which produces graduates who will be more employable. Once vocational educators "buy into the standards," education is going to be more relevant to the needs of business and industry and help students make a better connection between school and work. One respondent felt the goal should be to "help the student become a fully competent, contributing, self-motivating and self-fulfilling member of society. The connection between teaching and learning, the standards, and meeting the needs of business will help students see that meaning taking place."

Vocational educators have a "target to shoot at which is very relevant--a set of minimum standards which will bring vocational education into today's technology." Some respondents felt educators can place their students because they can show industry what the students know. It gives business and industry a common ground for talking and the teacher becomes more responsive to industry. Industry and education will be able to work together to identify what the learner needs to know. There are some things which are important and the teacher can point to them and say, "This is what industry is saying it wants."

Yes, respondents felt in time, with additional work, skill standards could have an effective impact on vocational education. They will help make the curriculum more relevant to the needs of business, make vocational educators more accountable to the needs of business and industry, make students better prepared to enter the workforce, and make business and industry more efficient and productive. In addressing accountability, one interviewee definitely felt that vocational educators would become more accountable as a result of incorporating skill standards into the teacher training programs and responded:

> I could get a student in here and I start showing him things and doing things, and he says, "I've never heard of that. I've never seen that." And the person is intelligent. I know that he's telling me the truth. I know that the opportunity wasn't afforded him to learn this. Then I'm going to hold that educator responsible. I'm going to say, "You told me this boy went through a certified course, and he did not." I'm not going to deal with those people again.

Another respondent said "The standards show another way that a marriage can occur between business, industry, and education. The standards themselves will give educators a feeling that they are actually providing what industry wants--a better entry-level worker. Students will be better prepared and that's good for everybody. They provide tools to allow the teacher to carry the educational program further than if those standards didn't exist. They will certainly affect the quality of vocational programs

and have a real positive impact." Another believed they would make vocational educators more effective: "It makes the process and the education of the student more applicable to today's business environment so that they are theoretically better educated. They have a better experience because it's a realistic situation, and it's based on fact and not something that doesn't bear any resemblance to the workplace." One interviewee provided this summary to the question of effectiveness:

> Basically as you look at it, the skill standards can be very effective in terms of not only improving the product that a particular institution produces, i.e., the student. Once that product is produced, industry will benefit from having better products, from not having to invest their own resources to teaching them again when they get into industry. There's a lot of things across the U.S. that education doesn't meet the bill. Industry is currently having to re-educate employees, whether it be electronics-related or simply English as a second language.
>
> If we have an effective use of the skill standards, industry should be able to at least back off--I don't know if we'll ever get to the point of not having to do it--at least back off on some of the investment we currently make in that. If you look back to the days that some of us can remember back when they used to have an F.C.C. license. F.C.C. license used to mean something across the U.S. Nowadays it doesn't because it's fallen by the wayside in terms of technology and everything else. I'd like to see the skill standards become the new F.C.C. license so that it has some meat and it's recognized in industry around the U.S. and around the world, for that matter; that's F.C.C. in another league. I believe it can and will get there. I don't think it's going to happen overnight, by a long shot.
>
> And what you'll find is that it will happen over time. It's going to happen in pockets. You'll find people having success with it and success breeds success. You'll find one company saying, "Hey, this is good," and another company saying, "Hey, that's good." It will be like a snowball coming down the hill. It will pick up momentum.
>
> What's going to happen is education is going to have to start the ball rolling. They have to be out there building that little snowball at the top of the hill, and they have to be patient and hang in there. The seed they plant today won't graduate--depending on what particular institution they're at--for two to four years down the road. Then it's going to take that long for an industry to begin seeing it. So it's like an investment in a small company. You have to start with a few dollars now and depend

on it to grow later on. So people just have to have faith and kind of believe it's going to go.

Findings and Conclusions

All respondents felt there would be positive impact on the effectiveness of vocational education but some believed more work needed to be done to further develop the standards before their full potential would be reached. A positive impact which is occurring is that representatives from business and industry are communicating with each other. Most respondents felt that the skill standard projects have become an effective way to address the need for communication among business and industry and education.

There was an overall feeling that once the curriculum had been written or rewritten to meet the needs of business and industry, and teachers had an understanding of what was expected of them--with relevant training, then there would be the desired effectiveness. There was not complete agreement on whose responsibility it was to develop curriculum, business and industry or education. They did agree that the standards provide vocational educators with goals which are very relevant and which can help bring vocational education into today's technology. Respondents felt that in time, with additional work, skill standards could have an impact on vocational education by making the curriculum more relevant to the needs of business and industry, make vocational educators more accountable to the needs of business and industry, make students better prepared to enter the workforce, and make business and industry more efficient and productive.

Implications and Recommendations

The skill standards projects were initiated in part to strengthen the education system and provide employers with high performance workers. This in turn would strengthen our economy and place the United States in a competitive position in the global marketplace. The 22 national skill standard projects provided the mechanism for developing a skill standards system. Technical committees played a vital role in developing these standards. The perceptions of the interviewees regarding their work on the skill standards technical committees has provided this researcher with insights as to whether the standards would impact vocational education. While much progress has been made to develop standards and have them accepted by business and industry and education, there is much which needs to be done.

In order to develop skill standards which will provide employers with high performance workers, the standards must be tested in industry and assessment tools must to be developed. Further development of the standards provides an opportunity to foster additional dialogue among business and industry, education, labor, and government. The standards as developed have given business and industry a means to let vocational educators know their needs, but there is still a long way to go. Therefore, continued dialogue could provide occasions for labor representatives and business and industry to develop that common language and bring technicians and frontline workers into the communication process. In addition, continued communication provides the opportunity for industry to "sell" the standards to those employers who do not see the need to develop the high performance worker. Communication can also strengthen the support of local administrators and local advisory committee members.

One implication of this study is that the skill standards should be used to develop relevant curriculum for vocational programs at the secondary and post-secondary levels. Training programs need to be developed for worker retraining, updating of skills, and retraining teachers. This training could be provided by industry trainers, private training facilities, and community college continuing education programs. This is an area where employers and educators must work closely so that the curriculum provides the tools for teaching the skills. A result of appropriate curricula would be that students can acquire the skills for particular jobs or occupations. A relevant curriculum would mean that pertinent learning would take place because educators would know and focus on the needs of industry. Federal funding is an issue which has been of key significance in the advances made by the skill standards committees. Federal funding should continue so that the committees can complete the work of developing curriculum, establishing performance measurements, and planning how the standards will be updated. However, industry must take the lead in assuring that the standards committees continue their work and must ultimately provide the funding for updating the standards, providing education with the necessary equipment and tools, and fostering effective dialogue among all partners.

This study provides evidence that skill standard technical committees serve as viable mechanisms for establishing skill standards. The study also provides evidence that improved communication and stronger partnerships between business and industry and education can help establish relevant vocational education curricula. The study suggests that the development of national industry-based skill standards contributes to reforming education which could lead to supplying qualified workers for high-performance work places.

References

Office of Work-Based Learning, Employment and Training Administration. (1992). Analysis of the findings of the public dialogue on voluntary, industry-based skill standards and certification: Abstract. Unpublished manuscript. Washington, DC: U. S. Department of Labor.

Parks, D. L., & Henderson, G. H. (1987, January/February). Making the most of advisory groups. Vocational Education Journal, 62(1), 20-23.

South Carolina Department of Education. (1990). Handbook for advisory groups in vocational education. Columbia, SC: Author. (ERIC Document Reproduction Service No. ED 328 715)

U. S. Congress. (1994). Goals 2000. Educate America Act. Public Law 103-227. Washington, DC: Author.

U. S. Congress. (1990). The Carl D. Perkins vocational and applied technology education act of 1990. Public Law 101-392. Washington, DC: Author.

U. S. Department of Labor, Office of Information. (1993, July). Labor secretary Reich supports national, voluntary skill standards system. News. Washington, DC: Author.

Vocational Education Weekly. (1993, December 6). Nine more skill standards grants awarded. Alexandria, VA: American Vocational Association.

Wentling, T. (1980). Evaluating occupational education and training programs. Boston: Allyn and Bacon.

A Grounded Theory Approach to Identifying the Essential Attributes of Quality Education-to-Work Curriculum

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A Grounded Theory Approach to Identifying the Essential Attributes of Quality Education-to-Work Curriculum

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Abstract

The matter of curriculum is central to the public school reform movement currently consuming American schools. Beyond the declaration of eight new national education goals, the *Educate America: Goals 2000 Act* seeks to formulate curriculum standards as a foundation for a world-class educational system. At present, the notion of "standards" or "measures of quality" for education-to-work curriculum has yet to be given serious consideration.

The objective of this inquiry was to identify the attributes of a quality education-to-work curriculum and formulate therefrom a grounded theory of curriculum quality to guide future development and evaluation efforts. The study utilized a multiple-case design, in which a modified analytic induction process took place.

The curriculum typology which emerged molded two conceptual distinctions of curriculum. The conceptualization of program/department level curriculum was distinguished first, while curriculum enacted at the classroom level was second. From these two levels, each were identified as having their own essential attributes for quality. The essential attributes were classified into four groupings relating to content goals, instruction, learner assessment, and equity and diversity considerations.

By providing a research-based typology of essential curriculum attributes, educators can potentially enhance the quality of education-to-work curriculum by integrating content, instructional practice, student assessment, and equity and diversity concepts. From this standpoint, educators have available a curriculum framework which includes identified contextual strategies that reflect not only current research, but constructivist knowledge, all of which support national education-to-work curriculum policy initiatives.

A Grounded Theory Approach to Identifying the Essential Attributes of Quality Education-to-Work Curriculum

Introduction

The matter of curriculum is central to the public school reform movement currently consuming American schools. Beyond the declaration of eight new national education goals, the *Educate America: Goals 2000 Act* seeks to formulate curriculum schema and standards as a foundation for a world-class educational system. Further, indicators or attributes of quality curricula in fields such as English, mathematics, and social studies are being developed to advance the implementation of new curricula on a national level. At present, the notion of "standards" or "measures of quality" for education-to-work curriculum has yet to be given serious consideration. Education-to-work curriculum (herein broadly defined to include the full spectrum of teaching and learning activities related directly or indirectly to the world of work) continues to vary widely in content, pedagogy, assessment, equity, and diversity. In today's changing world of work, critical evaluation of curriculum is a helpful step toward realizing national educational reform initiatives such as those outlined in the *Educate America: Goals 2000 Act*, and in extending the vision of education for work.

The purpose of this study was to produce knowledge that can inform the development of quality curriculum in the current milieu of education-to work programs and initiatives. The primary objective of this inquiry was to identify the attributes of a quality curriculum and formulate therefrom a grounded theory of curriculum quality to guide future development and evaluation efforts.

Significance

This study has potential implications in three areas of education: 1) implementing reform curricula; 2) preservice and inservice teacher development; and 3) the integration of vocational and academic education.

First, through this study's research methodology, practitioner-identified essential attributes of quality vocational curriculum can be used as a basis to design and implement a restructured education-to-work curricula. Systematically restructured through a melding of practitioner input and national policy reflections (e.g., GOALS 2000), a curricula typology illuminating the concepts of education-to-work can be posited (advanced) that will aid state-level administrators, as well as practitioners involved with implementation. In this activity, connection of classroom practice with national policy can be attempted. According to Stecher (1992), this type of connection has been almost nonexistent and much needed in the field of education. A potential resulting effect of education-to-work curricula could be an enriched developmental process consistent with national curriculum standards.

Second, this investigation will assist in re-directing and restructuring preservice teacher education, and will strengthen inservice teacher development programs. Using a grounded theory approach and involving teachers in the research process, practitioners were asked to identify not only the essential attributes of quality education-to-work curriculum, but also "why" and "how" those attributes are essential. These identifications are critical to presenting sound research that is both applicable and relevant to the field. Accordingly, teacher preservice and inservice programs can then move toward an integrated approach to teacher education by realizing the potential

pedagogical implications of this research. This move toward integration can be accomplished through preservice/inservice training focusing on integrating curriculum attributes and standards with teacher instructional goals (i.e., goals that focus on planning, pedagogy, and learning activities) (Stasz et al., 1993).

Finally, the analysis and findings of this study may provide a new approach for integrating education for work with other forms of education. States and local programs meeting the integration requirements of the Carl Perkins Vocational and Applied Technology Act of 1990, as well as the newly developed National Skill Standards, and various state reforms, will have a framework that not only provides attribute identification and validation, but also effective practice and assessment indicators focusing on integration concepts of academic and occupation education.

Statement of the Problem

As noted previously, the aim of this study was to identify the essential attributes of quality curriculum commonly associated with new workforce education initiatives. Recent descriptive research has emphasized the value of integrating academic and vocational knowledge and providing learners with active learning experiences (Claus, 1989; Johnson and Johnson, 1987; Laster, 1958; Stasz, McArthur, Lewis, and Ramsey, 1990). However, relatively little is found in the literature regarding the specific, defining elements of curriculum purporting to achieve these ends. Additionally, the voice of education-to-work practitioners (and their academic counterparts) concerning their perspectives on what constitutes quality curriculum materials has yet to be heard, and often has been omitted from the discussion.

Theoretical Base and Related Literature

The theoretical base of this study was founded on four specific research questions, from which a typology of essential curriculum attributes would emerge. These questions included: 1) from a practitioner perspective, what are the essential attributes of quality education-to-work curriculum? 2) how do these attributes interface with content, pedagogy, student assessment, and equity and diversity considerations? 3) does a theory of quality education-to-work curriculum emerge from this research? And 4) if a theory is found to exist, can a typology of quality attributes be designed that contributes to the establishment of education-to-work curriculum standards? As such, the reviewed literature was centered on these questions, an produced two focal domains. The first domain encompasses curriculum components that would be the basis to the development of an attribute typology illuminating the potential aspects of quality education-to-work curriculum (i.e., curriculum content, pedagogy, student assessment, and equity and diversity). The second focus was on the literature related to the study's proposed model programs/sites and the criteria used in their selection. Because practitioner voice has been limited in identifying quality attributes, the review stressed research-based findings and positions.

Research Methodology

The study used a "positioned subject approach" (Haworth and Conrad, 1994) that significantly contributed

to the development of a grounded theory related to curriculum quality. The essence of this approach rests in the manner that the researcher "grounded" her research efforts from the perspectives of curriculum practitioners (e.g., instructors and curriculum coordinators). These people were referred to as "participants" or as Haworth and Conrad (1994) note, "positioned subjects." Drawing from their own experiences, the positioned subjects were invited to enter into discussion by identifying (from their perspective) essential attributes of quality Education for work curriculum. Consistent with a constructivist framework, the positioned subjects shared their own understanding of essential attributes, and thus contributed to the inception of new knowledge. While their own learning formed the core of the new theory generated through this study, the participants were also asked to distinguish how the identified attributes are considered or enacted in their classroom-level curriculum (i.e., instructional methods, assessment, etc.).

To increase the opportunity for a rich inductive process, this study utilized a multiple-case design, in which a modified analytic induction process took place. In a multi-case design, Bertaux (1981) notes the importance of developing several histories or cases, "which together help the investigator understand what is called the sociological object" (Eagan, 1993, p. 19). Within this study, the "objects" were the essential attributes of quality Education for work curriculum. By utilizing a multi-case design, several cases or models of quality curriculum were compared and contrasted with one another, as well as the initial research assumptions. Embedded within the research design was the modified analytic induction approach. Bogan and Biklen (1992) suggest the following methodology process that, in turn, was used in this study: 1) the development of a definition and/or typology of the particular object or question; 2) contrasting the typology to the data as it is collected; 3) modifying the typology as new ideas/knowledge are formed; 4) including ideas/knowledge that may not fit into the original research typology; 5) finalizing with a redefined definition and accompanying typology. The multi-case design, with its modified analytic induction, produced a new theoretical foundation for curriculum formulation and policy. Strauss and Corbin define the grounded theory approach as "a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon" (1990, p. 24). Hernandez (1994) suggests that in the grounded theory paradigm "one does not begin with theory and seek to verify or improve it. Rather, a topic of interest is selected for study and what is relevant to the topic is allowed to emerge" (p. 5). The five processes of modified analytic induction hopefully reflect that "systematic set of procedures" within the grounded theory paradigm of this inquiry.

Findings and Recommendations

The curriculum typology which emerged molded two conceptual distinctions of curriculum. The conceptualization of program/department-level curriculum was distinguished first, while curriculum enacted at the classroom level was second. Each of these two levels were identified as having their own essential attributes for quality. The essential attributes were classified into four groupings relating to content goals, instruction, learner assessment, and equity and diversity considerations. The typology produced from the study's grounded theory approach follows:

I. Content Goals, Objectives, and Integration:
   a. Sequenced Learning and Thematic Webbing
   b. Learner Relevancy
   c. Career Concepts
   d. Articulation

II. Instruction Relating to the Learner and Content:
   a. Active and Meaningful Learning Experiences
   b. Strategies for Successful Higher Order Active Learning

III. Assessments Relating to Student Learning
   a. Targeting Assessment Methods
   b. Performance-Based and Authentic Assessments
   c. Traditional Assessments
   d. Assessment Documentation

IV. Integrating Equity and Diversity Considerations
   a. Reflect the Experiences, Contributions, Voices, and Perspectives of All Groups
   b. Challenge Traditional Cultural Assumptions
   c. Exclude Idiomatic Language

Specifically, identified program attributes included a safe and ordered school environment, program articulation, administrative support, and the willingness to try "new" ideas or innovations. The curriculum attributes at the program level were reported as being "overarching'" to those attributes essential for quality curriculum at the classroom level. Attributes identified at the classroom level included varying content design, active learning strategies based upon higher-order thinking skills, relating content to student experience, and using multiple assessment methods. Additionally, the identified essential attributes of quality curriculum at the classroom level evoked a contextual or holistic sense. Whereas content, instruction, and learner assessment were viewed by the positioned subjects as intrinsically linked or mutually supporting.

By providing educators with a research-based typology of essential curriculum attributes, this work can potentially enhance the quality of school-to-work curriculum by integrating content, instructional practice, student assessment, and equity and diversity concepts. From this standpoint, educators have available a curriculum framework which includes identified contextual strategies that reflect not only current research, but constructivist knowledge, all of which support national education-to-work curriculum policy initiatives.

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PERCEIVED EDUCATIONAL NEEDS OF WOMEN ENTREPRENEURS IN A BUSINESS INCUBATOR SETTING

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Abstract

Qualitative procedures were used to obtain data from women entrepreneurs in academic-based or nonprofit incubators. The 20 subjects chosen for the study had all been operating their businesses for at least one year. The interview guide used to obtain data was organized into three parts (a) demographic, (b) educational experiences related to Entrepreneurship, and (c) needed education. Several educational needs surfaced as predominant. Many of the functions small business owners have to perform were omitted completely from the courses. All 20 interviewees stated that they needed better knowledge of how to use a computer in their business operations.

PERCEIVED EDUCATIONAL NEEDS OF WOMEN ENTREPRENEURS

Introduction

Since the mid-1960's, women have been entering the work force in significant numbers in order to meet increasing economic demands. As their numbers grow, so does their understanding of business issues and their desire to become entrepreneurs. Entrepreneurs are individuals who develop innovative concepts and ideas to implement their plans to start fledgling businesses that will eventually become viable ventures. Nearly half of the women in today's work force want to start their own businesses (Cole, 1989) These new businesses may evolve in atypical business setting such as basements, garages, within the household, or elsewhere. Unfortunately, statistics published by the National Business Incubation Association indicate a very high failure rate for these small businesses (Farrell, 1986).

Purpose and Objectives

Business incubators are a relatively new idea within the business community. A business incubator is a facility designed to assist the development of new firms by providing a complete business environment for an entrepreneur. Incubators may provide entrepreneurs services and support including management, marketing, accounting and finance, and access to financing and capitalization. Services, equipment, and resources

available may include secretarial staff, a complete library of business resources, computer equipment, fax machines, copy machines, and many other support facilities usually at or below market cost. The incubator seeks to effectively link talent, technology, capital, and know-how with entrepreneurial talent in order to accelerate the commercialization of technology and encourage the development of new companies (Smilor, 1987).

While women have long owned businesses or toiled behind the scenes in family companies, the number of women entrepreneurs today is increasing at a dramatic rate, with women operating a third of the total estimated businesses. As Zellner (1994) notes, already one-in-ten American workers is employed by a woman-owned business. There are roughly 6.5 million enterprises with fewer than 500 employees that are owned or controlled by women in the United States. Women finding that they have little chance to advance to high level corporate positions due to the "glass ceiling" they encounter, turn to entrepreneurship to gain recognition (Miller, Springen, & Tsiantor, 1992). Further, "Women are willing to risk economic instability, in the short run, for increased independence, respect, freedom, human dignity, self-worth, expressiveness, and creativity," notes Jacobson (1993, p. 4501).

Thus, women entrepreneurs continue to make a significant impact on the business world, and their number continues to grow within incubators. However, research addressing their special education needs remains limited. These needs include steps involved in starting a business, personal interaction skills and techniques, time management applications, written and oral communication skills, and accounting principles (Wibben, 1988). Even publications devoted to women and minority business issues (*Executive Female, Entrepreneurial Woman, Black Enterprises*) have limited information regarding the educational needs of women entrepreneurs. This study therefore examined educational experiences and needs of women in incubator settings. The two purposes of the study were (a) to examine various education experiences women entrepreneurs deem related to business success in an incubator setting and (b) to examine educational needs not adequately addressed for women entrepreneurs for women entrepreneurs in an incubator setting.

Procedures

Qualitative procedures were used to obtain data from women entrepreneurs in academic-based or nonprofit incubators located in North Carolina and Pennsylvania. The particular incubators were selected for the variety of businesses operated by women and the stage of development of the women's businesses. The 20 subjects chosen for the study had all been operating their businesses for at least one year. The interview guide used to obtain data was organized into three parts (a) demographic information, (b) educational experiences related to entrepreneurship, and (c) needed education. In addition, the 8 managers of the incubators were interviewed to obtain their perceptions of educational

needs of the entrepreneurs. The interviews lasted from 30 minutes to 1 hour and 15 minutes.

Analysis of Data

Demographic information collected included age, previous business experience, whether the previous experience was related to the enterprise that the woman was undertaking, previous educational experiences, and various professional standards and certificates that the entrepreneur may have obtained. For educational experiences, the entrepreneurs were asked to name courses they had completed in four areas: (a) business, (b) computer related, (c) written and oral communications, and (d) other. For each of these, the entrepreneurs first identified courses in these categories, then they selected one course in each area that they felt helped them as an entrepreneur. For that course, they then related two events/instances when they found what they had learned helpful in their business. They described what happened, who was involved, and what was the outcome. For educational needs, the entrepreneurs were asked to describe two separate events/instances when they felt that their education did not adequately prepare them to meet the challenges they have faced as entrepreneurs. Again they described, what happened, who was involved, and what was the outcome. In addition, they were asked to name their current perceived educational needs. The same procedure was used to have the managers describe the educational needs of the entrepreneurs.

Results:

The average age of the 20 subjects was 43 with the median age also being 43. Only one subject was less than 30, while 14 were in their 40s and 50s. The oldest entrepreneur was 58. On average they had been employed for over 15 years prior to deciding to open their own businesses. In most cases, the businesses were in a field similar to the one where they were previously employed. Their educational backgrounds were diverse ranging from a GED diploma to a Ph.D. in biological science. The majority of the subjects had attained an education that fell between 2-years of college and a bachelor's degree.

Educational experiences the interviewees identified as helpful for an entrepreneur included business courses of marketing, management, accounting. They found marketing useful in sales and advertising activities. Accounting they had studies proved particularly helpful in dealing with general ledger, payroll, accounts receivable, and accounts payable records and activities. Almost every subject mentioned accounting as being helpful, particularly in understanding and communicating about the financial needs of their businesses.

The interviewees noted that knowledge of computers was important through out their business operations and cited knowledge gained from computer related courses.

However, in many cases, the entrepreneurs did not have formal training either in the use of hardware or software. As for communication, they cited instances were specific communication courses had helped them present themselves favorably both orally and in writing. For other courses, they cited psychology and similar courses that assisted them with customer interaction.

Several educational needs surfaced as predominant. For example, they noted that most business courses they had completed focused on the structured organizational climate of large businesses. Many of the functions small business owners have to perform were omitted completely from their business courses or covered on a very minimal basis. Another educational need was the availability of courses they could take without being away from their own businesses extensive periods of time. They noted that intensive instructional sessions, scheduled Saturdays or evenings, would be best for them. Further, they noted that courses offered on-site at their incubators would be most helpful.

As for educational content, all 20 interviewees stated that they needed better knowledge of how to use a computer in their business operations. Time management was a second where instruction was needed. The female entrepreneur has to manage her business and, in addition, has home responsibilities that need to be addressed. The third specific content area was additional help with communications skills, both oral and written. For example, written presentations, particularly those pertaining to marketing, were of the utmost importance. Here again, they asked for courses directed to the needs of a the small business owners. They not only managed their own sales promotions but also wrote their own memos, letter, and collection notices. The fourth specific area mentioned accounting. The development of appropriate financial statements, budgets, projects, and other financial reports are crucial to small businesses.

Conclusions and/or Recommendations:

Educators need to develop courses that are readily accessible to the small business owners, as discussed by Heiman (1986). For example community colleges, four-year colleges, or other institutions could provide a computer lab for delivery of instruction within the incubator facilities themselves as suggested by Sublette (1994). It is important for the small business owner to reach the break-even point as quickly as possible. Most incubator facilities have required business plans and periodic review of the small business owner to ensure that this is accomplished within a reasonable amount of time. To assist the owner in determining when the break-even point will be reached, computer application capability and knowledge of accounting are critical. Further, supporting Wibben's (1988) findings, psychology, management, and human relations courses, when applied to the small business should also prove helpful. Entrepreneurs interviewed in this study found theses courses to be worthwhile even when not specifically directed toward their problems as small business owners.

The following recommendations for educators are based on the findings of this study.

1. Instruction focused on use of computers for financial records, marketing, sales promotion, and inventory tracking, etc. is particularly needed by women entrepreneurs. Sublette (1994) proposed such instruction for all small business owners.

2. In-depth instruction should be provided for software applications related to the accounting needs of small businesses. The software taught should include payroll, general ledger, accounts payable, and accounts receivable features. This finding supports those of Wibben (1988) in regard to software applications expertise needed by small business entrepreneurs.

3. Women entrepreneurs starting new businesses need marketing and sales skills as well as help with assertiveness as suggested by MacDonald (1985).

4. Human relations skills should be emphasized in courses designed for women entrepreneurs. These skills could be included in courses pertaining to management, psychology, sociology, human resources, and marketing. This supports Wibben's (1988) suggestions.

5. Women entrepreneurs need help with time management, including scheduling techniques. Thus, instruction in these procedures should be provided as noted by Applegate (1992).

6. Classes and seminars should be available on an intensive basis to entrepreneurs at their incubator facility. With this type of delivery, the owners could enhance their managerial skills without extensive pressure on already tight schedules.

References

Applegate, J. (1992). From executive to entrepreneur. *Working Woman, 17*(7), 33.

Cole, D. (1989). The entrepreneurial self. *Psychology Today, 23*, 60-63.

Farrell, M. (1986, November). Headstarts for startups. *Savvy*, 64.

Heiman, G. (1986, March 19). The economy's incubator. *U.S. News & World Report*, S19-S20.

Jacobson, M. L. (1993). Essential values and characteristics of entrepreneurial women formerly managers in a corporate setting. *Dissertation Abstracts International, 54-12A*, 4501 (Doctoral dissertation, The Union Institute).

MacDonald, J. L. (1985) The traits and characteristics of women entrepreneurs: Criteria for predicting success in business management. *Dissertation Abstracts International, 46-08A,* 2169. (Doctoral dissertation, University of Wyoming).

Miller, A., Springen, K. & Tsiantar, D. (1992, August 24). Now: The brick wall. *Newsweek*, 54-56.

Smilor, R. W. (1987, September/October. Commercializing technology through new business incubators. *Research Management, 30(5)*, 36-41.

Sublette, G. (1994, December). Computer training centers. *Entrepreneur*, 82.

Wibben, C. H. (1988). The perception of selected female entrepreneurs regarding entrepreneurial competencies. *Dissertation Abstracts International, 46-06A,* 1440. (Doctoral dissertation, East Texas State University).

THE INFLUENCE OF EXPERT STATUS AND LEARNING STYLE PREFERENCE ON CRITICAL THINKING ABILITIES OF PROFESSIONAL NURSES

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Abstract

This study compared the critical thinking ability of three groups of nurses: novice, experienced, and expert. The study also sought to identify the influence of individual characteristics, including learning styles, on the critical thinking ability of professional nurses. Results included: a) a significant relationship for novice nurses in overall critical thinking ability and academic grade point average (r=.37, p one-tail = .01); b) experts scored significantly higher than novices only on the Inductive Reasoning subscale measure ($F(2, 125) = 4.22$, p = .02); and c) no differences between expert and experienced nurses on critical thinking measures.

Introduction

The issue of critical thinking in education has recently gained much popularity and concern. This is evidenced by a plethora of articles in the popular and professional literature, by the availability of numerous seminars and workshops, by the establishment of academic centers devoted to critical thinking, and by its inclusion as a demonstrable outcome required for accreditation of educational programs, including those for baccalaureate nursing education.

Concern regarding the poor quality of reasoning exhibited by students in problem solving or in thinking about issues is reflected in writings such as Adler's The Paideia Proposal: An Educational Manifesto (1982), in "Why Johnny Can't Think" (Lichtenstein, 1987), and in Bloom's The Closing of the American Mind (1987). The Commission on the Skills of the American Workforce (1990) also identified a need for problem solving, critical thinking, communication and interpersonal relationship skills in response to changing technology and growing employee autonomy.

Professional nurses encompass the greatest number of health care workers today (U.S. Department of Health and Human Services, 1990). The changing landscape of the American health care delivery system mandates that professional nurses function optimally and more independently in a complex, dynamic milieu. In order to effectively provide nursing care, nurses need to access and process much information, make important clinical judgments, solve complex problems, and rapidly make decisions. It thus becomes imperative that nurses employ critical thinking skills in their daily professional practice.

Critical thinking is an old concept which has garnered much attention during the past decade, both as a desirable educational process and outcome, as well as a researchable entity. The reader is directed to the extensive works of Brookfield (1989), Ennis (1962, 1985), Facione (1986, 1990), Norris (1985, 1992), Norris and Ennis (1989), McPeck (1981, 1990), Paul (1990, 1993), Harvey Siegel (1988), Watson and Glaser (1980) and numerous others for further conceptual understanding of critical thinking.

The Cumulative Index of Nursing and Allied Health Literature (CINAHL) database began listing critical thinking in 1989, attesting to the fact that nursing research in the area of critical thinking is of recent origin. Longitudinal and especially cross-sectional studies have been done. Studies have varied in subject populations, size, sampling, and in measures of critical thinking, with the Watson-Glaser Test predominating. Overall results of such studies in nursing are mixed - some studies reflect student gains over the course of an educational experience, others do not. Very little information has been gained regarding type of critical thinking subskills most evident in nursing populations. The present study was specifically designed to gather information regarding critical thinking subskills evident in both experienced and novice professional nurses.

Although there is no generally accepted definition of critical thinking per se, the conceptualization adopted for this study was that of the Delphi Consensus (Facione, 1990b, 1994). This Consensus was developed by a panel of 46 theoreticians drawn from throughout the U.S. and Canada, representing several fields. These experts characterized critical thinking as purposeful, self-regulatory judgment with the core cognitive skills of interpretation, analysis, inference, evaluation, and explanation; inductive and deductive reasoning were also included.

The construct of learning styles as potentially mediating critical thinking ability was also considered in this study. Learning style may be germane to the study of critical thinking in several ways. Kurfiss (1988) lends support for such a study in stating that "Individual differences in approaches to critical thinking merit exploration, particularly those related to gender, ethnicity, and learning style" (pp. 103-104). Sander (1992), a nurse researcher, recommended including variables such as learning style, especially regarding teaching strategies for promoting critical thinking.

Kolb's Experiential Learning Theory (1976, 1985) provided a model for learning style, defining it as an individual's characteristic means of perceiving and processing information. Additional theoretical foundation for the conceptualizations of novice to expert professional nursing development was provided by the work of Benner (1984). This research applied and extended the Dreyfus model (Dreyfus and Dreyfus, 1980) of skill acquisition to clinical nursing practice.

What, then, is critical thinking, particularly in the context of nursing? More specifically, are there differences, and to what extent, between nurses' critical thinking skills at varying levels of professional experience? Research assessing critical thinking outcomes of various nursing education programs has been relatively scant, with overall ambiguous results. An important rationale for conducting this study was the absence of published research comparisons between novice professional and acknowledged nursing practice experts regarding level of critical thinking ability in professional nurses. At a time when the major professional nursing accrediting body, the National League for Nursing (NLN, 1991), mandates critical thinking ability as an educational outcome, it becomes imperative that the construct of critical thinking be more clearly explicated in terms of the discipline.

Determining the level of critical thinking of novices, in contrast to such ability in experienced nurses and recognized expert nurses, could provide a basis for ascertaining potential realistic gains in educational settings. Understanding differing levels and characteristics of critical thinking as a developmental process may well lead to the establishment of standards for critical thinking skills levels (Facione, 1986).

Purpose and Objectives

The primary purpose of this study was to compare samples of novice, experienced, and expert professional nurses in terms of their critical thinking ability. Additionally, the study sought to identify the influence of selected individual demographic characteristics, including learning styles, on the critical thinking ability of professional nurses.

Fourteen objectives were included in the study. Objectives for **each** of the nurse samples described and compared the nurses in terms of 12 selected demographic characteristics; determined the critical thinking ability of each sample; and determined the predominant learning style of each sample, then compared the samples on this measure. Three hypotheses were tested: 1) that of a positive relationship between critical thinking ability as reflected on the Overall Cognitive Skills scale of the California Critical Thinking Skills Test (CCTST) and cumulative grade point average in the sample of novice nurses; 2) that expert professional nurses exhibit higher levels of critical thinking, as measured by the CCTST, than do novice and experienced

professional nurses; 3) that a model exists which explains a significant portion of the variance in overall critical thinking ability of professional nurses, and the variables of expert status and learning style preference are significant contributors to that model.

Procedures

This exploratory study included an ex post facto research design using a descriptive survey technique. Three samples of professional nurses (N = 128), representing three levels of experience and skill, included a convenience sample of 38 novice nurses (graduating generic baccalaureate nursing seniors from one program), 42 randomly selected experienced registered nurses, and a purposive sample of 48 expert registered nurses recognized as exemplary by their peers. Subjects included in the experienced and expert sample groups had practiced for at least five years in a clinical area, and had provided direct patient care equivalent to at least one eight hour shift once a week during the past year.

A three-part instrument used for data collection included: the California Critical Thinking Skills Test, 1990 (CCTST, based on the Delphi Consensus), the Kolb Learning Style Inventory 1985 (LSI), and a researcher developed Participant Profile Form (PPF). The CCTST was used to measure respondents' overall cognitive skills and five subskills. The Kolb LSI was used to determine respondents' predominant learning style. The PPF provided demographic information. Cumulative grade point average information was additionally obtained from the novice participants' university academic records. University institutional research approval and participant informed consent were obtained prior to data collection.

Data were collected on-site and by mailed questionnaire for the novice sample, and by mailed questionnaire for the experienced and expert samples. Useable response rates of those agreeing to participate were 84% for the novice group, and 96% each from the experienced and expert groups.

Analysis of Data

Data analysis entailed the use of descriptive statistics in describing the demographic characteristics of study participants. The Chi-square and ANOVA tests were used for comparisons as appropriate. Pearson's Product Moment Coefficient of Correlation was used to examine relationships. Multiple regression analysis was used in analysis of the hypothesis of a model explaining a significant portion of the variance in critical thinking ability of professional nurses. An alpha level of .05 was set a priori to establish statistical significance in this study.

The CCTST Test Manual (Facione & Facione, 1993), recommended that, for small study samples or for samples that are not normally distributed, test scores be converted to normalized standard scores before parametric statistical analysis and interpretation are undertaken. The Kolmogorov-Smirnov (K-S) Goodness of fit Test (Glass & Hopkins, 1984; Hays, 1988) was employed to determine normality of study population distributions regarding Overall Cognitive Skills of the CCTST. Results of the K-S tests revealed that each of the three nursing samples and the overall study sample were not significantly different from a normally distributed population. The researcher, however, elected to convert the CCTST raw scores to percentile scores for analysis because of the small sample sizes (n = 38, 42, & 48) included in the study population.

Results

Study results included: a) a significant positive relationship for **novice** nurses in overall critical thinking ability (CCTST Overall Cognitive Skills) and cumulative academic grade point average (r = .37, p one-tail = .01); b) significant differences between **expert** and **novice** nurses on the critical thinking subscale measure for Inductive Reasoning, F (2, 125) = 4.22, p = .02; c) no significant differences between the **expert** and **experienced** nurses on any critical thinking measure. d) No model was found explaining a significant portion of the variance in critical thinking ability when experience/skill level, learning style, and selected demographic factors were entered as independent variables into a multiple regression analysis. e) Chi-square analysis revealed no significant association between the variable of learning style and experience/skill level of the nurses.

Table 1 presents ANOVA information regarding the significant Inductive Reasoning finding using percentile scores.

Table 1

Analysis of Variance for CCTST Inductive Reasoning Scores Among Novice, Experienced, and Expert Professional Nurses

Source	df	MS	F	p
Between groups	2	1796.20	4.22	.02
Within groups	125	425.76		
Total	127			

Note. ANOVA results from data analysis of Inductive Reasoning **raw scores** were similar, F = 3.79, p = .03.

To determine specifically which groups were different, the Tukey's post hoc multiple comparison test was used to follow up the significant F value. Findings of this procedure revealed that the expert nurse group was significantly higher on the Inductive Reasoning score than the novice nurse group, but that no other pairwise comparisons were significant. Table 2 presents the critical thinking mean percentile scores of all three study samples and the significant finding regarding Inductive Reasoning.

Table 2

Mean Percentile Critical Thinking Scores for Novice, Experienced, and Expert Nurses

CCTST Scale	Novice Mean % SD	Experienced Mean % SD	Expert Mean % SD	F	p
Overall Cognitive Skills (CT)	56.34 23.25	60.74 26.31	65.25 24.23	1.39	.25
Analysis	58.34 27.86	56.64 29.18	58.67 28.34	.06	.94
Evaluation	62.58 23.14	70.69 22.95	72.92 22.54	2.32	.10
Inference	54.37 25.59	54.00 28.18	57.00 23.81	.18	.83
Deductive Reasoning	49.11 24.02	45.60 28.60	50.25 24.62	.39	.68
Inductive Reasoning	65.26[a] 21.73	74.69[b] 21.80	78.00[b] 18.60	4.22	**.02**

Note. ANOVA df = 2 & 125.
[a,b] Means not sharing a common superscript are significantly different at p <.05.

The final study objective tested the hypothesis that a model exists which explains a significant portion of the variance in professional nurses' overall critical thinking ability (CCTST: Overall Cognitive Skills), and the variables of expert status and learning style preference are significant contributors to that model. Multiple regression analysis was completed with critical thinking ability (CCTST: Overall Cognitive Skills measure using percentile means) as the dependent variable and nursing status (novice,

experienced, and expert) entered first as independent variables. Considered alone, nursing status explained 2.18% of the variance in critical thinking Overall Cognitive Skills. The four LSI learning style categories (Accommodator, Assimilator, Converger, and Diverger) were next entered as independent variables, explaining an additional 4.19% of the variance in critical thinking. A series of demographic variables were then entered stepwise as independent variables (age, ethnic origin, master's degree education, professional certification, and years of clinical experience). Only two variables, expert status and Assimilator learning style, remained in the equation and contributed to 6.37% of the variance explaining critical thinking in these samples of nurses. (Gender was not included due to an inadequate sample size of 7 males in the study.) The final model, however was not found to be statistically significant ($F = 1.6609$, $p = .15$) as reflected in Table 3.

Table 3

Multiple Regression Analysis of Critical Thinking for Study Sample of Professional Nurses

Source of Variation	df	MS	F-ratio	p-Value
Regression	5	990.0226	1.661	.15
Residual	122	596.0810		
Total	127*			

Variables in the Equation

Variables	Multiple R	R^2 Change	F Change	p Change	Beta
Expert[a]					.1297
Experienced[b]	.1476	.0218	1.392	.252	.0838
Converger[c]					.0256
Accommodator[d]					-.0702
Assimilator[e]	.2524	.0419	1.822	.147	.2593

Variables **Not** in the Equation

Variables	t	Sign t
Years of Experience[f]	-.007	.994
Age[g]	-1.926	.057
Ethnic[h]	-.455	.650
Education/Masters[i]	.345	.730
Certification[j]	.689	.492

*One expert subject's CCTST responses were incomplete and were thus excluded.

(table cont'd.)

[a]Designated expert nurse.

[b]Experienced nurse.

[c]Predominant learning style of Converger.

[d]Predominant learning style of Accommodator.

[e]Predominant learning style of Assimilator.

[f]Number of years of clinical experience.

[g]Birth year subtracted from 1995.

[h]Ethnic group.

[i]Reported masters degree education.

[j]Earned professional credentials beyond RN licensure.

With the exception of age and level of education completed for the novice group, the three sample groups in this study did not differ in terms of selected demographic variables. Experienced and expert professional nurses in this study performed above the norm on all measures of critical thinking, and tended to perform best on Inductive Reasoning, and least well on Deductive Reasoning measures. According to the CCTST Test Manual (Facione & Facione, 1993), the Inductive subscale "means an argument's conclusion is purportedly warranted, but not necessitated, by the assumed truth of its premises" (p. 4). Overall, the critical thinking measures used failed to distinguish the sample of expert nurses from the experienced and novice nurse samples. Nurses in this study performed relatively similarly on five of the six critical thinking skills measured. Significant differences in critical thinking were found only pertaining to the novice and expert sample groups. The nurses in this study were similar in reflecting all four learning styles.

Conclusions and Recommendations

Implications include the need to further explore critical thinking subskills, replicate the findings, and elucidate the areas of strength and weakness in critical thinking abilities within nursing. Additionally, the construct of critical thinking measured by the CCTST may not be the same construct or a valid measure which the nursing profession identifies as an essential attribute of professional knowledge or performance. The CCTST may be an instrument of greater utility in measuring critical thinking gains on the preservice level, but of lesser utility in measuring critical thinking on a more advanced practice level.

Conclusions related to demographic findings regarding the novice sample were that many (55%) of them were gainfully employed in addition to their full-time student status. They had worked a mean of 22 hours a week during the past year. The novice sample generally reflected a high level of academic performance, as evidenced by the group's mean grade point average of 2.95 on a 4.0 (A) scale.

Recommendations included a longitudinal follow-up study, possibly incorporating qualitative measures, to elucidate the construct of critical thinking in expert performance. Exploration of the critical thinking **subskills,** further clarifying the significant finding related to the expert nurse group's higher Inductive Reasoning score could be particularly fruitful. Measures of Inductive Reasoning in performance, rather than using a written test, might be considered in study design. As the nurses in this study reflected a variety of learning styles, it is recommended that nurse educators in all settings design learning activities incorporating a variety of perceptual and processing modalities.

In summary, the present study extended the body of knowledge regarding critical thinking ability in nursing by exploring differences in the ability among three levels of professional nurses: novices, experienced, and expert nurses. A significant contribution was that of further elucidating some differences related to specific subscales of critical thinking evident in the expert sample, namely that of Inductive Reasoning. The present research also contributed to validating earlier findings of an association between students' cumulative grade point academic average and overall cognitive skills. The effects of experience, certification, and age were also found to be contributors, although non-significant, in the development of critical thinking ability. Results of the current study did not reveal a significant relationship between any measure of critical thinking ability and predominant learning style.

References

Adler, M. J. (1982). The Paideia proposal: An educational manifesto. New York: Macmillan.

Benner, P. (1984). From novice to expert. Excellence and power in clinical nursing practice. Menlo Park, CA: Addison-Wesley Publishing Company, Nursing Division.

Bloom, Allan. (1987). The closing of the American mind. New York: Simon & Schuster, Inc.

Brookfield, S. (1989). Developing critical thinkers. Challenging adults to explore alternative ways of thinking and acting. San Francisco: Jossey-Bass.

Commission on the Skills of the American Workforce. (1990). America's choice: High skills or low wages. Rochester, NY: National Center on Education and the Economy.

Dreyfus, S. E., & Dreyfus, H. L. (1980). A five-stage model of the mental activities involved in directed skill acquisition. Unpublished report. U.S. Air Force Office of Scientific Research (Contract No. F49620-79-C-0063).

Ennis, R. (1962). A concept of critical thinking. Harvard Educational Review, 31(1), 83.

Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. Educational Leadership, 43(2), 44-48.

Facione, P. A. (1986). Testing college-level critical thinking. Liberal Education, 72, 221-231.

Facione, P. A. (1990). California Critical Thinking Skills Test (CCTST): Form A. Millbrae, CA: California Academic Press.

Facione, P. A. (1990b). Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction. Executive Summary. "The Delphi Report." Millbrae, CA: California Academic Press.

Facione, P. A. (1994, June). Critical thinking. The 1990 American Philosophical Association Delphi consensus findings. Paper presented at the meeting of the American Association for Higher Education, Assessment Forum, Washington, DC.

Facione, P. A., & Facione, N. C. (1993). Test Manual: The California Critical Thinking Skills Test. Form A and B (3rd ed.). Millbrae, CA: California Academic Press.

Glass, G. V., & Hopkins, K. D. (1984). Statistical methods in education and psychology (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

Hays, W. L. (1988). Statistics (4th ed.). New York: Holt, Rinehart and Winston, Inc.

Kolb, D. A. (1976). Learning Style Inventory technical manual. Boston: McBer and Company.

Kolb, D. A. (1985). Learning Style Inventory. Boston: McBer and Company.

Kurfiss, J. G. (1988). Critical thinking: Theory, research, practice, and possibilities. (ASHE-ERIC Higher Education Report No. 2). College Station, TX: Texas A & M University.

Lichtenstein, G. (1987, August 10). Why Johnny can't think. US, 38-41.

McPeck, J. E. (1981). Critical thinking and education. New York: St. Martin's Press, Inc.

McPeck, J. E. (1990). Teaching critical thinking. Dialogue and dialectic. New York: Routledge.

National League for Nursing. (1991). Criteria and guidelines for the evaluation of baccalaureate nursing programs. New York: National League for Nursing, Council of Baccalaureate and Higher Degree Programs.

Norris, S. P. (1985). Synthesis of research on critical thinking. Educational Leadership, 2(8), 40-45.

Norris, S. P. (Ed.). (1992). The generalizability of critical thinking. Multiple perspectives on an educational ideal. New York: Teachers College Press, Columbia University.

Norris, S. P., & Ennis, R. H. (1989). Evaluating critical thinking. Pacific Grove, CA: Midwest Publications.

Paul, R. (1990). Critical thinking: What every person needs to survive in a rapidly changing world. Rohnert Park, CA: Center for Critical Thinking and Moral Critique, Sonoma State University.

Paul, R. (1993). Critical thinking. How to prepare students for a rapidly changing world (Ed. by J. Willsen and A. J. A. Binker). Santa Rosa, CA: The Foundation for Critical Thinking.

Sander, C. (1992). Nursing faculty perceptions of critical thinking. Dissertation Abstracts International. (University Microfilms No. AAD92-24599).

Seigel, H. (1988). Educating reason. Rationality, critical thinking, and education. New York: Routledge Inc.

U.S. Department of Health and Human Services. (1990). Nursing. Seventh report to the President and Congress on the status of health personnel in the United States. Washington, DC: Author.

Watson, G., & Glaser, E. M. (1980). Watson-Glaser Critical Thinking Appraisal Manual. Forms A and B. Cleveland, OH: The Psychological Corporation, Harcourt Brace Jovanovich, Inc.

ACADEMIC SUCCESS OF GED AND HIGH SCHOOL GRADUATES IN THE SECRETARIAL DIPLOMA PROGRAMS AT AUGUSTA TECHNICAL INSTITUTE

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Abstract

The purpose of this study was to determine if there is a difference in the academic success of GED recipients (GED) and high school graduates (HSG) enrolled in the secretarial diploma programs at Augusta Technical Institute from 1987 to 1993.

The study found significant differences in GED and HSG relative to age, ethnic background, admission test scores (reading only), and number of graduates. However, there was no significant difference found in GED and HSG relative to grade point average, gender, admission test scores (math and language), credit hours attempted and completed, and number of quarters spent in school.

Introduction

A faltering public education system, the increasing demands of expanding technology, and demographic changes have placed America--and, certainly, its institutions of technical and adult education in a dilemma. These factors have continued to put a strain on educational institutions. The reality the institutions must struggle with is to reduce barriers to higher education and to develop a curriculum to meet expanding personal, economic, and societal needs, while wrestling with more limited budgets, facilities, and equipment.

Institutions of technical and adult education are severely challenged to give all students, GED recipients and high school graduates (HSG), the chance to obtain higher education and training. There is no longer a reason to expect that only people with high school diplomas can achieve academic success in higher education (Swift, 1989; Welch, 1980).

As the popularity of technical and adult education increased, a lack of research comparing GED recipients to HSG in secretarial diploma programs developed. Most of the previous studies conducted at community colleges, junior colleges, senior colleges and universities

focused on a variety of needs of the 2- and 4-year college students in other programs. Hence, there is a need for studies in secretarial diploma programs in technical and adult education.

Purpose And Objectives

The purpose of this study was to determine if there is a difference in the academic success of GED recipients and HSG who enrolled in the following secretarial diploma programs at Augusta Technical Institute (ATI) from 1987 to 1993: Business and Office Technology diploma program and Information and Office Technology diploma program. The major emphasis of the study was to determine if information exists in the students' records which could be used to better assist students in the secretarial diploma programs to succeed academically.

The following hypotheses were tested in this study: (1) There is a significant difference between GED recipients and HSG relative to academic success, as measured by their GPA; (2) There is a significant difference between GED recipients and HSG relative to demographic variables: age, gender, and ethnic background; (3) There is a significant difference between the GED recipients and high school graduates relative to their admission test scores; (4) There is a significant difference between GED recipients and HSG relative to the number of credit hours attempted, the number of credit hours completed, and the number of quarters spent in school; and (5) There is a significant difference between GED recipients and HSG relative to the number of graduates.

Procedures

Students in the ATI secretarial diploma programs between Summer Quarter, 1987, and Fall Quarter, 1993, who met the criteria to be included in the study, had to be enrolled in school for at least one quarter. This meant that they attempted at least one credit course toward their program of study, and was enrolled in either day or evening classes, full-time or part-time. The students' permanent folders were searched for an admissions application, transcripts, admission test scores, and proof of high school graduation or GED certification. If all the following data were found, then the students' information were recorded onto the data collection sheets: (1) birthdate; (2) ethnic background; (3) gender; (4) admissions test scores; and (5) whether or not they graduated.

The researcher made no attempt to control the number of high school graduates or the number of GED recipients used in the study. Four hundred and three (403) students met the criteria for inclusion in the study. The following data were calculated by the researcher for each of the subjects included in the study: age; grade point average; number of credit hours attempted; number of credit hours completed; and the number of quarters spent in school. Augusta Technical Institute utilized a 0 to 4.0 grade point system (ranging from letter grade "A" = 4.0 to "F" = 0). For this study, only courses in which the students received A, B, C,

D, or F were used to calculate their GPA. The birthdate was used to calculate the age of the subjects at the time of enrollment into the secretarial programs.

The data collected on the students were analyzed using descriptive statistics and inferential techniques. The two statistical procedures, chi-square was used to test hypotheses 2 and 5, and the t-test for hypotheses 1, 2, 3 and 4. A level of significance of .05 was utilized for all tests.

Analysis of Data

Characteristics and Hypotheses

Demographically, students in the study are overwhelmingly comprised of 399 (99.0%) females, and only 4 (1.0%) males. In the sample, there are 223 (55.1%) blacks, 172 (43.0%) whites, and 8 (1.9%) categorized as other, comprised of Asians and Hispanics. Out of 403 students, 370 (91.8%) are high school graduates and 33 (8.2%) are GED recipients. Ninety-three (23.1%) of the students in the study graduated, while 310 (76.9%) had not. There are 274 (68.0%) students enrolled in the Business and Office Technology program and 129 (32.0%) in the Information and Office Technology program.

Table 1 presents the grade point averages for the entire population. The mean GPA for the entire population (N=403) was 2.37, with a standard deviation of .873.

Table 1
Grade Point Average for Entire Population

	GED			HSG			Total		
GPA Ranges	N	% WI	% POP	N	% WI	% POP	N	%	ACC %
0.00- .99	4	12	0.99	23	6	5.71	27	6.70	6.70
1.00-1.99	4	12	0.99	80	22	19.85	84	20.84	27.54
2.00-2.99	18	55	4.47	163	44	40.45	181	44.92	72.46
3.00-4.00	7	21	1.74	104	28	25.80	111	27.54	100.00
Total	33	100	8.19	370	100	91.81	403	100.00	

%WI=Percentage within group; %POP=Percentage of entire population; ACC%= Accumulation percentage

As shown in Table 2, the population is divided into four groups because of the size and the wide range of ages. The mean age of the entire population is 25.78 (standard deviation 8.52). Of the population, more than 25% were less than or equal to 19 years of age group. This age group is rather large because the study is utilizing the ages of the students at the time of entry into the school.

Table 2
Grade Point Average According to Age Grouping

	GED			HSG		
Age Groups	N	Mean GPA	SD	N	Mean GPA	SD
≤ 19	6	2.44	0.576	101	2.38	0.754
> 19 and ≤ 22	6	2.37	1.337	82	2.01	0.927
> 22 and ≤ 30	7	1.69	1.274	113	2.47	0.780
> 30	14	2.34	0.899	74	2.69	0.877
Total	33			370		

The mean number of credit hours attempted by the students in the population is 50.72 (standard deviation of 33.92). Table 3 shows that approximately 30% of the entire population attempted 4 to 25 credit hours. The students attempted from 4 to 268 credit hours.

Table 3
Credit Hours Attempted for All Students

	GED			HSG			TOTAL		
Credit Hrs Attempted	N	% WI	% POP	N	% WI	% POP	N	% POP	ACC %
4 - 25	14	42	3.47	106	29	26.30	120	29.78	29.78
26 - 50	10	30	3.48	90	24	22.33	100	24.81	54.59
51 - 87	7	21	1.74	106	29	26.30	113	28.04	82.63
88 or more	2	6	.50	68	18	16.87	70	17.37	100.00
Total	33		8.19	370		91.81	403	100.00	

%WI = Percentage within group; %POP = Percentage of entire population; ACC% = Accumulated percentage

The mean number of credit hours completed by the students in the population is 44.89 (standard deviation 30.64). Table 4 reveals that the largest percentage of students in the population (37%) completed 0 to 25 credit hours, however the number of credit hours completed by each student varied from 0 to 142.

Table 4
Credit Hours Completed for All Students

	GED			HSG			TOTAL		
Credit Hrs Completed	N	% WI	% POP	N	% WI	% POP	N	% POP	ACC %
0 - 25	17	52	4.22	131	35	32.50	148	36.72	36.72
26 - 50	10	30	2.48	86	23	21.34	96	23.82	60.54
51 - 87	5	15	1.25	106	29	26.30	111	27.55	88.09
88 or over	1	3	.25	47	13	11.66	48	11.91	100.00
Total	33	100	8.19	370	100	91.81	403	100.00	

%WI = Percentage within group; %POP = Percentage of entire population; ACC% = Accumulated percentage

The students in the population spent from 1 to 46 quarters in school. The mean number of quarters the population spent in attending school was 4.73, with a standard deviation of 4.00.

As illustrated in Table 5, the largest proportion of the population attended school only one quarter, approximately 15% (N=60). About 24% (N=96) of the population attended school beyond six quarters, 23% (N=92) of which were HSG.

Within the GED group, the two largest proportions of the students attended school for either one quarter and three quarters (27% equally). Less than 1% of the GED recipients attended school beyond five or six quarters. Within the HSG group, approximately 25% of the students attended school beyond six quarters. The BOT program (minimum 87 credit hours) and IOT programs (minimum 78 credit hours) are six and five quarters, respectively.

Table 5
Number of Quarters Spent in School for All Students

	GED			HSG			TOTAL		
Quarters Attended	N	% WI	% POP	N	% WI	% POP	N	% WI	% POP
1	9	27	2.23	51	14	12.66	60	14.89	14.89
2	4	12	.99	51	14	12.66	55	13.65	28.54
3	2	6	.50	49	13	12.16	51	12.66	41.20
4	9	27	2.23	34	9	8.44	43	10.67	51.87
5	3	9	.74	46	12	11.41	49	12.16	64.03
6	2	6	.50	47	13	11.66	49	12.16	76.19
7	2	6	.50	40	11	9.93	42	10.42	86.60
8	1	3	.25	27	7	6.70	28	6.95	93.56
9 or more	1	3	.25	25	7	6.20	26	6.45	100.00
Total	33	100	8.19	370	100	91.81	403	100.00	

%WI = Percentage within group; %POP = Percentage of entire population; ACC% = Accumulated percentage

The following five hypotheses compared the academic success of GED recipients and high school graduates in the secretarial diploma programs at ATI.

Hypothesis 1

T-test analyses indicated that high school graduates' mean GPA (2.39) is higher than the GED recipients' mean GPA (2.23). There is no significant difference between high school graduates and GED recipients relative to grade point average.

Hypothesis 2

GED recipients (mean age 32) are older than high school graduates (mean age 25.25). The t-test analyses indicated a significant difference between GED recipients and high school graduates relative to age.

A chi-square analysis indicated no significant difference between GED recipients and high school graduates relative to gender. Both the GED recipients and high school graduates are almost all female. Only 1% (N=4) are male, and are all HSG.

A significant difference between GED recipients and high school graduates relative to ethnic background was indicated in a chi-square analysis. There were more black students (N=223) than whites (N=172) in the population, and there where more black HSG (N=218) than white HSG (N=144). However, there were more white GED recipients (N=28) than black GED recipients (N=5).

Hypothesis 3

The t-test analysis indicated no significant difference in GED recipients and high school graduates relative to TAPP (Technical Assessment Placement Program) math or language scores. High school graduates (mean score 21.22) had higher math scores than GED recipients (mean score 21.03) on the TAPP test, and GED recipients (mean score 25.36) scored higher on the TAPP language test than high school graduates (mean score 24.17).

However, the t-test analysis indicated a significant difference in GED recipients and high school graduates relative to TAPP reading test scores. GED recipients (mean score 30.23) scored higher than high school graduates (mean score 27.08) on the TAPP reading test.

Hypothesis 4

The mean credit hours attempted by high school graduates (52.01) is much higher than GED recipients (36.27). The mean number of credit hours completed by high school graduates (46.20) is much higher than the GED recipients (30.17). The mean number of quarters that high school graduates spend in school (4.74) is also higher than GED recipients (4.67).

The t-test analyses indicated a significant difference in GED recipients and high school graduates relative to the number of credit hours they attempt and the credit hours completed. However, the t-test analysis indicated no significant difference in the GED recipients and the high school graduates relative to the number of quarters they attend school.

Hypothesis 5

Chi-square analysis indicated a significant difference in the number of graduates between GED recipients and high school graduates. More high school graduates (N=90) complete their program of study than GED recipients (N=3).

Results

The results of this study were similar to the conclusions of such studies as Ayers (1978), Wilson et al. (1981), Colert (1983), Grady (1983), Klein and Grise (1987), and Clark (1987), that GED recipients perform academically as well as HSG, using grade point averages as a measure of success. GED recipients' and high school graduates' mean GPA was over 2.00.

Sultan (1989) and Swift (1989) reported that generally as age increased so did the grade point average. This study found that there is a significant difference in GED recipients and high school graduates relative to age, with GED recipients being older.

High school graduates attempted more credit hours and completed more credit hours than GED recipients (Andrew, 1951; Moore, 1973; Quinn and Haberman, 1986; Schillo, 1990). And the present study concurs. In addition, this study, like many others, indicated that high school graduates spent more time in school than GED recipients (Andrew, 1951; Moore, 1973; Quinn and Haberman, 1986).

Byrd et al. (1973) found that there is no significant difference in reading placement scores between GED recipients and HSG, as did the present study. However, the present study also found that GED recipients scored higher than HSG on the language and reading test, and that HSG scored higher on the math test. But, there is no significant difference between the two groups relative to math and language.

Like Klein and Grise (1987) and Wilson et al. (1980), this study found that a larger percentage of high school graduates complete their program of study than GED recipients. In fact, using graduation as a measure of success, 24.32% of the high school graduates (90 out of 370) at ATI in the secretarial diploma programs are more successful than 10% of the GED recipients (3 out of 30). There is a significant difference in HSG and GED recipients relative to the rate of graduation.

The major emphasis of the study was to determine if information exists in the students' records which could be used to better assist students in the secretarial diploma programs to succeed academically. Yes, there is valuable information in the students' records: (1) birthdate; (2) ethnic background; (3) gender; (4) admissions test scores; (5) high school diploma or GED certificate; (6) the length of time in school; (7) transcripts; (8) whether or not they graduated from their program of study, and much more.

The results of the State of Georgia studies show that there is a growing need for more GED programs. In the city of Augusta, Augusta Technical Institute is playing an important role in striving to meet the needs of the community, by providing literacy and developmental education. In fact, "more than 80% of the persons taking the GED test in Georgia expected to attend a community college, junior college, technical school, on-the-job training program, trade school or a 4-year college (Follow-Up Study of GED Graduates in Georgia, 1991, p.

12). These GED recipients will have potentially the same opportunities and experiences as high school graduates.

Conclusions

The realities of changing demographics and, of course, a faltering public education system is all the more reason that each student who seeks admission into an institution of higher education should be handled with care. While the GED recipient is considered at-risk, increasingly more of the traditional high school graduates are, too. The realities of the 1990s influences the attendance patterns of female students who try to juggle marriage, children, jobs, unemployment, and school. This is an especially critical issue in secretarial programs whose enrollments are predominately female.

Georgia's Department of Technical and Adult Education does not make any distinction between GED recipients and high school graduates who enroll in the state's vocational-technical institutions. One of the advantages to this policy is that all the students enrolled, regardless of their educational background, start out on an equal opportunity basis, which is as it should be with an open-door policy. However, one of the disadvantages of this policy is that without consideration of a student's educational background, their academic success may be jeopardized.

Academic advisors should be made aware of the likelihood of GED recipients needing careful counseling with regard to career choice and course selection, and that such advisement be required for all GED recipients and other at-risk students (ie., single parent, displaced homemaker, unemployed, and special needs person). It goes without saying that students who have more recent classroom experiences may be able to adapt better to an educational setting than those who have not been in a learning environment for a period of time.

This study found that GED recipients between the ages of 22 and 30 tend to have low grade point averages. A student must maintain a 2.00 GPA to be in good standing with the school. Otherwise, a student is subject to suspension from school and a loss of financial aid. Therefore, for both academic and fiscal reasons, it is very important that at-risk students' progress be monitored periodically. Also, intervention may be necessary in order to keep the students successfully progressing toward a realistic goal.

With adequate time and resources for development, at-risk students can be prepared to perform college-level work. The development of workshops or seminars for these at-risk students entering technical and adult education that could provide studying skills and techniques for coping with education, family and work would be extra-ordinarily useful. Many GED recipients tend not to attempt or complete as many credit hours or spend as much time in school as high school graduates. This may be one factor as to why only 10% of GED recipients complete their program of study.

Perhaps more effort should be made to instill the idea of "lifelong learning" among the students who enroll in these institutions, so that they can develop a sense of belonging. History tends to repeat itself, if you drop out of school once, it's not hard to do it again. On the other hand, students who have learned how to perform appropriately in an educational environment are perhaps more easily able to adapt to another learning environment. Whereas, students who have not mastered well the skills required for learning may become discouraged more easily, and thus be more likely to drop out.

Recommendations

To expand the results of this study and to broaden the understanding of GED recipients versus high school graduates enrolled in technical and adult education institutions the following recommendations are made for additional research:

This study should be replicated to include all secretarial science programs in all the educational institutions under the supervision of the Georgia Department of Technical and Adult Education.

Future studies should be done to compare GED recipients and high school graduates that transfer to four-year colleges and universities.

GED recipients who enroll at technical schools should be studied in relation to the support services they need and/or utilize while enrolled. Support services would include, but not be limited to counseling, advising, tutorial assistance, study skills training, library skills training, vocabulary skills development, etc.

A study should be conducted comparing GED recipients and high school graduates that take into consideration socioeconomic factors such as employment, income, ethnicity, marital status, number of children, transportation, academic preparation, etc.

A study should be conducted of graduates of Georgia Department of Technical and Adult Education programs. This study should compare the GED recipients and high school graduates that complete these programs, whether or not they go to work, and if not, why. Comparison should be made in the number employed, number employed in a career related to their field of study, salary received, and potential for advancement within their career.

Research should be conducted to compare the success of GED recipients and high school graduates enrolled in Georgia Department of Technical and Adult Education using graduation from a technical and vocational programs as a measure of success. Interactions of sex, age, ethnicity, length of time enrolled, and socioeconomic factors should be considered in determining success of the students.

Future studies should focus on gathering specific data pertaining to areas within the technical school decision-makers' span of control. These studies should include part-time students and students who drop out prior to completing their program of study.

Future studies should be done regarding the mandatory assessment and placement policies in technical and adult education.

Further studies are needed to investigate predictors of success in technical and adult education programs such as the utilization of high school grade point averages, GED test scores, placement test scores, and the advising process, etc.

Many students drop out of school because they are not satisfied with the program they are enrolled in, which sometimes is not their first choice. Research should be conducted to develop more effective ways to identify and clarify student's goals and aspirations when admitted to the school.

Federal, state, and local regulations require that students be enrolled in school a minimum number of credit hours to receive financial aid, and those hours vary for each financial agency. That minimum number of credit hours for most students is an overload to the students who are juggling a complicated family, school and/or job situation. Research should be done to address the effects of the financial aid system, and the various financial aid programs, on the academic success of students in technical and adult education.

References

Andrew, D. C. (1951). A comparative study of the academic achievement of high school graduates and nongraduates. College and University, XXVII, 50-55.

Ayers, C. V. (1978). A study to compare the academic success of the general educational development test graduates and the high school graduates at Surrey Community College for the 1977-1978 academic year. (Doctoral Dissertation, Ft. Lauderdale, Florida: Nova University). (ERIC Document Reproduction Service No. ED 184 650).

Byrd, F. Hayes, E., Hendrix, J., and Simpson, D. (1973). A comparison of the educational success of GED recipients and traditional high school graduates in selected areas at Wilkes Community College (North Carolina). Wilkes Community College, Wilkesboro, North Carolina. (ERIC Document Reproduction Service No. ED 100 439).

Clark, R. S. (1987). Academic achievement of GED graduates of the community college of Allegheny County. College of Allegheny County, Pennsylvania. (ERIC Document Reproduction Service No. ED 284 050).

Colert, S. (1983). High school equivalency and high school diploma students at Brandon University: A comparison of academic success. Washington, DC: American Council on Education. (ERIC Document Reproduction Service No. ED 291 885).

Georgia Department of Technical and Adult Education, Office of Adult Literacy Programs. (1991). Follow-Up Study of GED Graduates in Georgia.

Grady, D. K. (1983). The academic performance of general educational development entrants compared with high school diploma entrants to Broward Community College, 1980-1983. Unpublished doctoral dissertation, Florida Atlantic University, Boca Raton.

Klein, J. D. and Grise, P. J. (1987). GED and traditional high school diploma holders attending Florida's community colleges: A comparison of academic success. Washington, DC: GED Testing Service of the American Council on Education. (ERIC Document Reproduction Service No. ED 291 892).

Moore, S. C. (1973). Some comparisons between GED test entrants and high school graduates in junior colleges. Unpublished doctoral dissertation, The University of Texas, Austin.

Quinn, L. and Haberman, M. (1986). Are GED certificate holders ready for post secondary education? Metropolitan Education, 1(2), 72-82.

Schillo, P. A. (1990). A comparison of the academic success of GED certificate students and high school graduates at Lorain County Community College. Bowling Green State University, Ohio. (ERIC Document Reproduction Service No. ED 324 076).

Sultan, M. H. (1989). Academic performance of GED recipients in two four-year post-secondary institutions in Mississippi. (Doctoral dissertation, The University of Southern Mississippi, 1989). Dissertation Abstracts International, 50(08A), 2356. (Publication No. AAC8925511).

Swift, W. D. (1989). A comparison of the academic success of practical nursing. (Doctoral dissertation, The University of Georgia, Athens, 1989). Dissertation Abstracts International, 50(06A), 1530. (Publication No. AAC8919310).

Welch, W. M. (1980). A comparison of the academic performance of GED, high school, and college transfer students in an associate of science degree program in nursing. Unpublished doctoral dissertation, Vanderbilt University, Tennessee.

Wilson, R. C., Davis, P. D. and Davis, J. C. (1980). A comparison of post-secondary vocational success of high school diploma and high school equivalency (GED) certificate students. Adult Literacy and Basic Education, 4, 3-8.

CAROUSEL PRESENTATION

THE NEW AMERICAN HIGH SCHOOL: PREPARING STUDENTS FOR COLLEGE AND CAREERS AT THE SAME TIME

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Abstract

In hundreds of American communities, high schools are being reorganized to prepare all students for both college and careers. The change is occurring because of growing realization that the information society and accelerating economic change are increasing the necessity for continual lifelong learning, in particular at work. At the same time, these new developments help to resolve chronic problems of student apathy and under-achievement in high schools, and they are consistent with long-standing educational theories, notably Dewey's "education through occupations", as well as more recent notions of authentic pedagogy. This paper describes how high schools of various kinds are using career-related curricular options as part of a strategy for the entire school. Using data from a 1996 national study that included site visits to 30 high schools, the experience of students, teachers, and administrators in schools that are embracing this new form of integrated education are described.

Introduction

In the last decade, a number of high school reform efforts have focused on raising the academic standards and achievement of all students. While many of these efforts have been limited to just a few classes, students, and teachers, some have involved entire high schools. Driven by high dropout rates on the one hand, and the increased levels of academic and technological skills necessary in the workplace on the other, these high schools are reaching those students who are disenfranchised in traditional high school settings, as well as mainstream and college-bound students who want to relate to what they are learning to a practical context. By organizing the students' experiences in the classroom and in other real-world contexts, these schools are preparing students for both college careers.

Purpose and Objectives

Since the 1980s, much educational reform has attempted to help students master a broad range of knowledge and skills that will enable them to be employed and stay employed in the global economy in the 21st century. Independent initiatives by states and localities, in addition to federal legislation in the 1990 Perkins Act and the Goals 2000 Act, have all sought new approaches to enable students to use their minds well as they prepare for a lifetime of continued learning in a fast-changing economy and society.

In particular, the 1994 School-to-Work Opportunities Act calls for the development of systems with three major components designed to prepare students for both postsecondary education and high-skill employment. These components are school-based learning experiences, work-based learning experiences, and connecting activities. From the viewpoint of participating students, the purpose of a school-to-work system is to provide a coherent educational and developmental experience called a "career major."

Creating such a school-based learning component, including career majors, entails sweeping changes in curriculum, methods of instruction, and relations between schools and other organizations including employers and institutions of higher education. But the rationale for attempting this kind of whole-school reform is as compelling as the changes are far-reaching. Increasingly, work demands continual learning. This has always been true to some degree in professional and managerial work, but now it is even more true in these occupations, and continual learning is also becoming increasingly necessary for clerical and production workers. The growing necessity for learning at work is rooted in the relentless upgrading and spread of information technologies, which results in greater mobility of financial capital and greater turbulence in all kinds of markets, including labor markets. Firms are forced to become increasingly flexible, and employees are therefore required to embrace continual change. Those who are caught up in reorganization or downsizing and find themselves moving from one firm to another must try to learn as they go. And for those who are self-employed, the need for constant learning is self-evident.

These new high schools would prepare students for a lifetime of learning at work by promoting *high academic standards* along with *learning in a context of productive application*. The emphasis on academic standards is intended to correct a perceived deficiency of some traditional vocational education in high schools. At the same time, the concept of learning in a focused context also addresses a deficiency of some traditional academic instruction, namely, that students may perform well on tests and classroom assignments but never develop the knack of applying academic concepts to practical problems. Including work-based learning as part of the curriculum gives students an opportunity to practice using work experience to develop their knowledge and skill in a deliberate fashion. This ability to take charge of one's own learning at work is becoming increasingly critical for success in a fast-changing economy. Thus these high schools attempt to combine the best of traditional academic and vocational education in order to prepare every participating student for employment, further education, and a lifetime of learning at work.

In practice, many attempts at whole-school reform are likely to originate in places where previous programs, such as Tech Prep, apprenticeships or career academies, already exist. This study sought to identify high schools that were implementing whole-school reform and obtain "snapshots" of their reform efforts and the conditions that led to them.

Procedures

High schools were identified using a written nomination and telephone screening process. Approximately 170 schools were nominated. Based on these nominations, approximately 100 were interviewed by telephone to determine the extent to which students' experiences differed from traditional high schools in the use of work-based learning tied to an integrated academic-vocational curriculum. Also of interest were any forms of data indicating that student outcomes had improved during the last five years. While not always available, such data included decreased dropout rates, increased numbers of students going on to

two- and four-year college, or increased numbers of students taking Advanced Placement examinations. The ethnic make-up of the student population and any significant changes in the last five years were also rated.

Based on the phone screenings, 31 high schools received two-day site visits by members of the research team. Students, teachers, counselors, and administrators were interviewed using a structured, open-ended interview format. Questions to adult respondents centered on the conditions under which the reform effort began, the desired student outcomes the reform was intended to support, the kinds of changes in organizational structure, pedagogy, curriculum, and graduation requirements that had occurred, as well as major barriers encountered. Students were queried about their experiences in academic and vocational or technical classes, the extent to which their classroom learning was related to experiences in other contexts, including workplace internships or job shadowing activities, as well as their postsecondary goals. Researchers shadowed students in academic and vocational classes, and on worksite/internship placements. All interviews were tape recorded and transcribed. From these interviews and documents collected on all site visits, 10 high schools were selected to present aspects of their reform efforts in a conference for educational policymakers at the local, state and national levels held in May 1996, in Washington, D.C. These 10 included urban, suburban, and rural locales as well as comprehensive high schools, magnet schools, and high schools organized around schools-within-schools, or academies.

Preliminary Findings

The interviews revealed that schools and districts refer to both local and national conditions as motivators for pursuing whole-school reform. Examples of local conditions included court-ordered desegregation efforts, the lack of employment available for those with only high school diplomas, or vast changes in the makeup of the student population. National conditions included the increasingly technological society and global economy, leading to an increased demand for employees that can be critical problem-solvers and lifelong learners.

Despite the wide range in motivators, we found that schools where students themselves talked most compellingly about the kinds of experiences that challenged them and helped them define their education and career goals after high school shared several elements. Leadership in the school as well as among business and community partners agreed that the high school should provide:

- high academic and technical standards to prepare all students for college and careers at the same time;
- the opportunity to learn within the context of a career major or other special interest, such as Business and Finance or International Studies;
- opportunities to learn by doing—in the classroom, in workplaces and through community service;
- smaller and supportive learning environments;
- a wide range of information about future opportunities, including careers and postsecondary education;
- strong links between secondary and postsecondary schools, and broad community partnerships; and
- technology to enhance learning.

These elements are generally supported by the use of alternative scheduling to allow longer class and preparation periods, more coordinated staff development efforts that create cross-disciplinary linkages among faculty, the introduction of career counseling and advising duties to the classroom teacher role, and the use of adult mentors from external partners, including business, postsecondary institutions and community-based organizations.

Alternative Models

The way these elements were implemented depended on the mix of local and regional conditions available, but organizational restructuring of the traditional high school has often led to one of three alternative models: (1) the single-theme school; (2) several schools-within-a-school; and (3) several "majors" in a comprehensive high school.

The single-theme school approaches the issue of better meeting students' needs by reducing the complexity of the comprehensive high school. These schools are usually magnet schools that students choose based on an interest in the school's theme. Magnet schools first appeared in the 1950s as a way of introducing competition and school choice to public education. In the 1960s they were used to deter "white flight," the phenomenon of white families fleeing out of the cities to the suburbs to avoid forced busing (Grubb, 1995, p. 50). One theme, often occupational in nature, provides the context for all academic and technical courses and curriculum. Examples of these themes are agriculture, aviation, fashion, or technology. Classroom learning is combined with other experiences, including work-based learning, community service, and research projects, in which the school's theme is central to the activities. Staff development focuses on the integration of the theme into the curriculum of all academic subject areas. In addition, school leadership encourages the staff to become educated on the career fields within the theme themselves. All teachers may be required to make several visits to local related industries or to join the vocational professional association of the school's theme, for example, Future Farmers of America.

In the second model, the school is organized into several smaller communities of between 150 and 200 students each. These communities are often called "academies" or "houses." The academy model was first developed in the late 1960s in Philadelphia and later in the early 80s in California. Career academies are schools within schools, where the curriculum is organized around a career theme (Stern, Raby, and Dayton, 1992). In their first incarnations, the smaller structure was designed to better serve students designated as at-risk of dropping out of high school. Since then, however, many high schools have chosen to provide the academy structure for all students, including the four-year college bound. Each academy has its own particular focus, again often industry-related, but not necessarily so. Examples of academies include health, business and finance, media, or international studies. Like the single-theme school, each academy provides academic and vocational instruction related to the focus and relies on the teachers' commitment to learning or having an understanding of the real-world connections of the career focus. Students take their academy classes together, and often with the same teachers for two or three years.

The third model is relatively new, introduced mostly after President Clinton's signing of the 1994 School-to-Work Opportunities Act. Comprehensive high schools have begun to implement majors to move away from the "shopping mall" concept in which students select classes based more on the availability in their schedules than on any interest or relation to future goals. In this type of high school, first described by Grubb (1995), technical and vocational courses are organized according to broad themes, similar to the academies, but academic classes are not necessarily so strictly grouped. For example, students in the health major may take courses in health occupations together but may be in different math

or English classes. Similarly, an Algebra class may include students from the health, transportation, and business majors.

Conclusions and Recommendations

While this study identified 30 high schools around the country that are pursuing whole-school reform around these three models, there are many more high schools that are doing the same. It is a slow, labor-intensive process that not only changes the way students and staff relate to the curriculum content, but also the way they relate to each other. Along the way, schools must be willing to invest large amounts of time and effort to train faculty and staff to develop new curricula, pedagogies and assessments as well as to use new technologies and information resources, such as partnerships with business or postsecondary institutions. Given the difficulties of this kind of organizational change, the following recommendations are made.

More time is needed for high school staff, including teachers, counselors and administrators, to work with each other and with employers and postsecondary institutions. For this purpose, staff development activities need to be restructured to allow more intensive "retreats" in the summer for curriculum development or teacher externships in workplaces other than schools, full staff inservices in which teachers in different "majors" or "academies" in one school can learn how their subject matter is integrated into the career areas of other majors or academies, and daily or weekly common planning time among all teachers within a major or academy to discuss integrated projects or assessment methods. These kinds of staff development activities are not intended to replace the more traditional conferences or workshops that are provided. Instead, they are necessary to create the kind of focused and applied learning experiences this kind of high school provides.

Opportunities to learn in the workplace are needed for high school staff, especially teachers of academic subjects. Often called "externships," these opportunities can be one day or two weeks in length. The workplace and the school agree on the length and kind of experience a school staff person can have. For academic teachers who have not been in a workplace other than the school for a decade or more, these kinds of externships are essential in encouraging curriculum development. Math teachers that were interviewed in this study in particular talked about the impact of observing workers using algebra and geometry on the job. Teachers of many subjects describe the value of participating in work groups that require high levels of written and oral communication skills and teamwork. Academic teachers of many subjects talked about the relief of being able to respond to students who ask, "Why do I have to learn this?" In addition, these kinds of experiences also prepare teachers for the new work of developing curricula and assessment methods in teams instead of alone.

Development and distribution of curriculum modules, projects or lesson plans, relating academic subjects to career themes are needed to help build awareness and understanding of the concept of curriculum "integration." Principals and teachers at the schools visited in this study recognize that traditional teachers with many years of experience often have believe integrated curriculum is less academically challenging than traditional curriculum or does not maintain sufficiently high academic standards. While this can be true and is a danger to be avoided, it is not necessarily the case that complex abstract concepts must be diluted when presented in a hands-on fashion or related to a real-world problem.

References

GRUBB, W.N. (Ed.) (1995) *Education Through Occupations in American High Schools*. New York, NY: Teachers College Press.

HULL, D. and PARNELL, D. (1991) *Tech Prep Associate Degree: A Win/Win Experience*, Waco, TX: Center for Occupational Research and Development.

JOBS FOR THE FUTURE (1993) *Learning that Works: A Youth Apprenticeship Briefing Book*, Cambridge, MA: Jobs for the Future.

STERN, D., RABY, M. and DAYTON, C. (1992) *Career Academies: Partnerships for Reconstructing American High Schools*, San Francisco, CA: Jossey-Bass.

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